

AMATEUR RADIO

AUGUST, 1957

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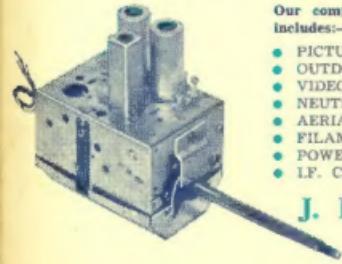


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Telephone: MF 4505

PRINTERS:
"RICHMOND CHRONICLE,"
Shakespeare St., Richmond, E.I.
Telephone: JB 2418.

MSS. and Magazine Correspondence should be forwarded to the Editor, "Amateur Radio," C.O.R. House, 191 Queen Street, Melbourne, C.I., on or before the 8th of each month.

Subscription rate in Australia is 12/- per annum, in advance (post paid) and A15/- in all other countries.

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AMATEUR RADIO

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

Published by the Wireless Institute of Australia,
C.O.R. House, 191 Queen Street,
Melbourne, C.I.

EDITORIAL



LEST WE FORGET

With August once more upon us, our thoughts turn to Contests and especially the Remembrance Day Contest, for it was on the 15th day of this month twelve years ago that peace once more returned to a weary world, inevitably leaving in its wake a trail of bereaved. Amateur Radio and its many exponents was no exception. We were proud to have provided the fighting Services and the Merchant Marine with many operators who at the outset of hostilities provided a pool of experienced and readily available personnel to draw upon whilst new adherents were being trained to play their worthy part.

It was to hand down to posterity their unselfish sacrifice and for the part they played that the first contest to be known as the Remembrance Day Contest was inaugurated in 1947. This coming event therefore will be the tenth anniversary of this popular test in skill and endurance between States. The last few years have seen a marked increase in this Contest's popularity with newcomers and oldtimers, active and (usually) non-active Amateurs alike. It is not unusual perhaps then that the original concept of this contest has been largely

forgotten in the tear and rush of exchanging serials and of pitting one's skill and operating ability against the next comer.

A very worthy and commendable suggestion—to bring home to all participants the original nature and concept of this Contest—will most likely be incorporated in the event for 1958, but for this year we enjoin you to enter and enjoy yourselves at the same time sparing a thought for the real reason for the Contest. The Rules of the Contest have been modified over the years to endeavour to provide every entrant with an interest in his final State score, to obtain as many entries from within a State as possible, to encourage the use of all Amateur bands, and to keep the Rules simple and the results easy to check.

Your Division requires your entry to assist in its final points, so dust off the rig, warm up the receiver, stoke up the transmitter and get cracking—but before zero hour arrives, spare a thought for those to whom this Contest is dedicated and let your operating be based on the concepts of gentlemanly conduct and unselfishness which inspired THOSE YOU REMEMBER.

FEDERAL EXECUTIVE.

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A 100 Watt D.S.B. Mobile Transmitter*

BY JACK NAJORK, W2HNN

WHEN John Costas, W2CRR, came up with his double sideband suppressed carrier transmitter ("CQ," Jan. '57, and "A.R." July '57) we looked over the pros and cons and came to the unbelievable conclusion that here, at last, was the closest approach yet to something for nothing. For the mobile operator fighting QRM and low efficiency antennae, this mode of emission has, in general, all the advantages of s.s.b. but is actually simpler to build and operate than an a.m. transmitter of equivalent power. Here are the advantages as compared to an a.m. rig in the same power class:

1. More "talk power."
2. Easier and less expensive to construct.
3. Lower average d.c. input power required.
4. No critical or specialised components needed.
5. Instant change to straight a.m. if desired.

The drawback of the system, if it can be interpreted as such, is that you will now be talking to the s.s.b. men and must therefore be equipped to receive them. Lacking a b.f.o., this can easily be done by using the transmitter v.f.o. for carrier insertion, as will be explained later.

The basic difference between a high level d.s.b. transmitter and a conventional a.m. rig is in the final amplifier and the method of modulating it. Existing exciters and/or drivers can be used together with conventional speech equipment. This was one of the reasons for using a surplus Command transmitter as the heart of the mobile rig to be described. The other reason is that the oscillator circuit in the Command transmitter, when suitably isolated, takes a back seat to none in terms of stability. As in s.s.b., this feature is essential if the station at the other end is going to decipher your carrier-less sidebands.

CIRCUIT DETAILS

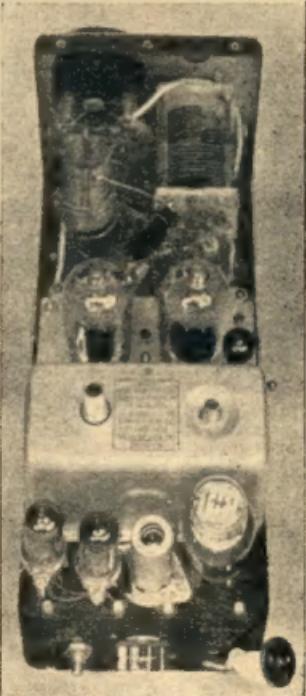
The Command transmitter we used originally tuned 4.0 to 5.3 Mc. and this range can easily be padded down to cover the 75 metre phone band (as well as the c.w. band if desired) by adroit manipulation of the oscillator coil slug and padder capacitor. Using this range Command rig has the added advantage of a higher "C" oscillator tank than would be the case if the 3.0 to 4.0 Mc. transmitter is used. This means better oscillator stability.

The original 1626 oscillator is followed by a 6AK6 buffer. It should be emphasised that some form of isolation between the oscillator and final is essential—otherwise the final will pull the oscillator frequency and you will have a novel system of f.m. plus double sideband less carrier, which will not endear you to the fellow at the other end. Since ours was a 12 volt system, the 6AK6 heater is wired in series with the front panel No. 47 pilot lamp thereby conserving 0.845 watts of d.c. power.

Last month an article on the theoretical approach to double sideband was reprinted from "CQ." From the same magazine herewith is printed a practical article on the same subject. Although it is referred to as a 100 watt d.s.b. mobile transmitter, it can quite easily become the basis of a home station transmitter.
—Ed. "A.R."

(You think like this after years of mobiling.)

The 6AK6 develops its drive across a low "Q" slug-tuned coil. A look at the schematic will show you how to get away from the nasty chore of centre



tapping this coil while still ending up with push-pull drive to the final grids. The small mica trimmer at the lower end of the coil compensates for the 6AK6 capacity across the top side of this coil so you will end up with equal grid drive to each final tube. If you want to be different, you can drive the grids in parallel and operate the plates

in push-pull and come out with the same results. In case you hadn't recognised it, this final is nothing more than our old friend, the push-push doubler—except that in this application it is operated straight through. The result is carrier cancellation.

Separate grid RFCs and grid resistors are needed with this arrangement, but this is desirable because we want to be able to look at the grid current for each final tube in initial tune-up. This scheme of push-pull input can be considered self-balancing and should therefore give us better carrier cancellation, although this is apparently not a problem. At any rate, none of the stations worked to date has been able to find the carrier so it must be pretty well buried.

The final tubes are 12DQ6 t.v. sweep output bottles—big brother to the 12BQ6. Both these types have high permeance—that is, you can make them pull their load of plate current with comparatively low plate voltage. A second very desirable characteristic of this family of tubes is that the screen power requirements are relatively low. This means that the audio modulating power required for a given peak power output is correspondingly lower. Although the original 1625 tubes can be used, their higher screen power requirements may result in somewhat less peak power unless the audio section is beefed up. Although either the 12BQ6 or 12DQ6 can be used, we settled for the latter because of the higher plate dissipation rating (15W. versus 11W.) and slightly higher gm.

The final tank is a conventional shunt-fed, single-ended circuit with a tapped, link-coupled antenna coil. Although the popular pi-network can be used, the author prefers the link coupling system for mobile work because the final cannot be loaded unless the antenna is resonant. This is not necessarily true with a pi-network as evidenced by the Hams who unknowingly load a length of co-ax line rather than an antenna.

The original final tuning capacitor is left ganged to the oscillator merely because removing it would wreck the entire dial drive assembly. Although an additional tank capacitor is used in the final, the original capacitor is connected in parallel with this to build a higher "C" tank and also to afford some degree of oscillator-final tracking. If you want to be fancy, you can tailor the final tank coil and added tuning capacitor to achieve perfect tracking across the entire band. Since most of our operation is in the top 50 Kc. of the band perfect tracking was not essential and frequency excursions of this order can be made without retuning the final. (Provided your loaded whip is resonant!)

Now we come to the pay-off on this d.s.b. system; the audio requirement. Or, to put it more concisely, the lack of it. The modulator consists of a 12AU7 miniature dual triode with sections in parallel. (Yes, you can use 12SN7 or 12BH7 with no changes.) This is driven

* Reprinted from "CQ," March, 1957.

by a resistance-coupled 12AT7 speech amplifier. The carbon mike input circuit is the familiar grounded-grid method which does away with the need for a mike current supply and mike transformer. Notice one important point in connection with the modulator. We must have push-pull audio output to modulate the screens. (By the same token, don't try to use tubes like 829B, 815, 832, etc., which have a common screen!) As the schematic will show, the screens are effectively at d.c. ground for d.s.b. emission. When audio is applied, one screen is driven positive and this tube will conduct. The second tube's screen, at the same time, is driven negative, so it just sits there and coasts. On the other half of the audio cycle, the second tube works and the first tube rests. In other words, at any given instant, only one final tube is working.

details, it is mentioned now in order to show the reason for inclusion of the d.s.b.-a.m. switch. More elaborate versions of this type of transmitter include a built-in tone generator to supply a steady audio modulating signal so the final can be resonated and loaded. This is not for us mobileers! So, you say, how about a steady whistle into the mike. Fine! But unless your whistler is a lot steadier than ours, you'll never find the plate current dip because small variations in whistle level will vary the plate current too much. The answer is the a.m. d.s.b. switch which provides two nice features.

In the a.m. position you have a conventional rig with carrier and two sidebands. This you can resonate and load in the usual fashion. You can also use this position to talk to other mobileers or die-hards who refuse to insert car-

switch to the other position restores the rig to d.s.b. A few minutes with the schematic will make this clear.

The modulation transformer required in this application is not critical except that it should provide a step-up in impedance between the modulator and final screens. A turns ratio step-up of at least one to two (full primary to full secondary) is needed and a step-up of one to four or one to six is much more desirable. With the lower ratios of transformation, more audio power will be needed for a given peak power output. Our transformer was dug out of the junk box and happened to be an interstage push-pull plates to push-pull grids. This was connected in reverse, with the modulator connected to one half of the grid winding to give a step-up of one to two.

In general, class "B" driver transformers are not suitable because they step down. However, if you can find a class "B" driver with push-pull plates to push-pull grids, you are in business. Connect it in reverse, that is, modulator connected to half the grid winding and screens connected to the plate winding. In our experiments we even tried a small 60 cycle power transformer with modulator connected to the 115v. primary and screens connected to the centre-tapped h.v. secondary. It worked almost as well as the interstage job, too, so do not be afraid to experiment.

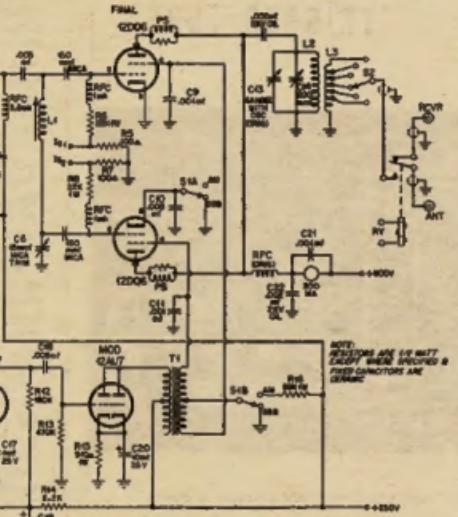
CONSTRUCTION

The original 1626 oscillator circuit is left intact and the output coupling link feeding the 1625 grids is reconnected to the buffer grid. The 6AK6 buffer, 12AT7 speech amplifier and 12AU7 are squeezed into the rear apron space formerly occupied by the crystal socket and indicator tube. The OA2 voltage regulator sits just behind one of the 12DQ6s. No special precautions in construction are required other than the usual one of shielding long audio leads to prevent r.f. and/or audio feedback.

Power is supplied at the rear via a Jones plug while photo connectors are used to antenna connections.

The original oscillator dial can be covered with paper and new calibrations inked in, or, it can be replaced with a disc of thin aluminium suitably marked.

Cooling sockets are needed for the 12DQ6s, these being secured to a sheet of aluminium which covers the area formerly occupied by the 1625s. Removal of the final padder condenser leaves room for the modulation transformer underneath. The original tank coil and antenna roller coil assembly are removed to make room for the meter, antenna coupling switch and final tank tuning capacitor. Naturally, it is not necessary to follow this exact order of construction. Just make your own parts fit the available space. Note also that control circuits are not shown. Your pet ideas are probably better than mine so why complicate the schematic?



Schematic of Transmitter.

L1—60 turns No. 28 enamel scramble wound on $\frac{1}{4}$ inch diam. slug-tuned coil former.

L2—50 turns No. 18 tinned, 1 inch diam. $\frac{3}{4}$ inch long. Air wound with plastic ribs.

L3—10 turns No. 14 tinned, wound around bottom of L2. Space diameter of wire and cement to L2 with 1/16 inch concentric clearance from L2. Tap every turn.

The idle tube is still hanging in the circuit, however, and its internal capacity acts as a neutralising capacitor for the working tube. Eureka!! True automatic neutralisation!

Obviously, with no audio applied and with zero screen voltage, application of plate voltage will produce very little plate current flow. With the antenna properly coupled, however, modulation will kick the plate current up to a high value. How, then, does one resonate and load the final of this rig, especially in an automobile?

Although this question would normally be answered later in the tune-up

for you. Once the rig is tuned up in the a.m. position, flip the switch to d.s.b. and you are tuned and ready to go with lots of talk power. To put it another way, once you tune up properly on a.m., no retuning is necessary when switching to d.s.b.

In the a.m. position, the switch performs two functions. First, the cathode of one of the final tubes is opened. This leaves us with a conventional, single-ended class C amplifier. Second, B+ is applied to the remaining tube's screen through the centre-tap of the modulation transformer. End result: a screen modulated final! Throwing the

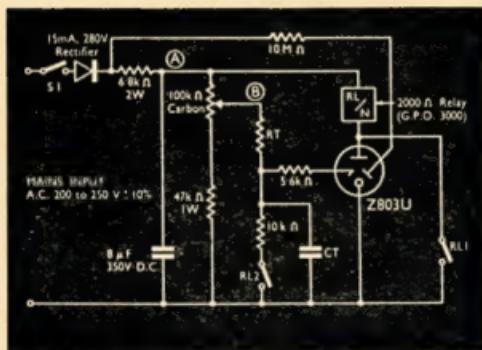
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Z803U

TRIGGER TUBE



The Z803U trigger tube can be used for a variety of timer, voltage control and general relay applications. It has an extremely stable trigger voltage over a very long operating life and offers the advantages of all Mullard cold cathode tubes — no heater supply requirements, no waiting for "warming-up" and good mechanical strength.



Typical of the applications of the Z803U is the simple interval timer described here which can cover the range between 5 seconds and 10 minutes. It may be operated direct from any a.c. mains supply between 200 and 250 volts. To start a timing sequence the mains supply is switched on (S1). The d.c. voltage at point A will then rise, in about 100 milliseconds, to between 184 and 282 volts, the actual level depending on the value of the local mains voltage. The timer capacitor CT will start to charge up through RT, the timer resistor.

When the voltage on CT reaches the critical trigger voltage of the Z803U the tube will fire, pulling in the relay, partially discharging the 5 microfarad smoothing capacitor, and lowering the voltage at A. The relay will self lock on contact RL1 thus extinguishing the Z803U, and the relay current will then be limited by the 6.8 k Ω series resistor. Contact RL2, which should make after RL1, re-sets the timer capacitor to zero volts.

However, the relay drops out only when S1 is opened. A new sequence can then be started on reclosing S1.

The 100k Ω preset potentiometer allows the timing circuit voltage to be set up so as to compensate both for component tolerances and for the value of the local supply voltage. The pre-firing voltage at point B will be about 170 volts.

The values of RT and CT will be set by the required time interval T' , and can be determined from the fact that $T' = 1.6 RT \cdot CT$.

RT should be a high stability resistor, while CT must be a capacitor with a small power factor, e.g., a paper or plastic film capacitor. All other components are of $\pm 10\%$ tolerance.

90° R.F. Phase Shift Networks

PART ONE

THE most critical sections of phase shift type s.s.b. equipment are the 90° audio and r.f. phase shift networks. The subject of Audio Phase Shift Networks was covered in a previous article in "A.R." (June and July, 1955), and in this article the various types of r.f. networks used will be dealt with.

These networks are simple in structure, they are not wide-band devices like the audio networks, as they have to produce a phase shift of 90° at only one frequency, the carrier frequency at which the s.s.b. signal is generated in the case of an exciter, or, the frequency at which detection takes place in the case of an s.s.b. receiving adaptor. The networks discussed can be used either in transmitter exciters or receiving adaptors.

The function of the r.f. phase shift network is to produce two voltages, equal in amplitude, but 90° apart in phase. Any discrepancy between the amplitudes of the two voltages, which we will call the two outputs, or a deviation from the 90° phase difference between them, results in a reduction of the sideband rejection, or suppression, and therefore, a reduction in performance of the associated equipment.

Amplitude variation between the two outputs affect the sideband suppression, in accordance with the formula:

$$\text{Sideband Suppression} = 20 \log \left(\frac{E_0 + E}{E} \right)$$

where E is the difference between the two output voltages, given as a percentage.

Thus a voltage difference of—
1.0% results in 46 db. suppression.
2.0% " " 40 db. "
4.0% " " 34 db. "

The above figures assume that the phase shift produced by the unit is perfect. Phase shift variations from 90° between the two outputs also affects the sideband suppression, and is calculated from the formula:

$$\text{Sideband Suppression} = \tan \left(\frac{\Delta}{A} \right)$$

where A = the number of degrees that the phase shift between the two network outputs departs from 90°.

Thus an error of—
1.0% produces 40 db. s.s.b. suppression.
2.0% " 35 db. "
3.5% " 30 db. "

These figures assume that the voltage balance of the two outputs is perfect.

Errors from both sources may be present at any time, so the r.f. p.s.n. (phase shift network) should be adjusted as carefully as possible to the required conditions.

Phase shift s.s.b. exciters fall into two general types: (1) Those that generate the s.s.b. signal at some fixed frequency outside the Amateur bands (usually 5 or 9 Mc.), and then use the heterodyning principle to obtain a signal within an Amateur band; (2) Exciters that generate the s.s.b. energy directly at the transmitter operating frequency.

* 26 Dutton Street, Yagoona, N.S.W.

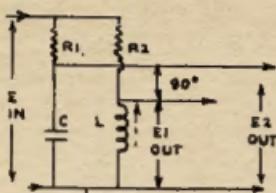


Fig. 1.—"Two-Branch" Type of Phase Shift Network.

At operating frequency F :

$$X_C = X_L = R_1 = R_2$$

and the input $Z = R_1$ or R_2

$$C \text{ in pF.} = \frac{R}{2\pi F}$$

$$L \text{ in } \mu\text{H.} = \frac{R}{2\pi F}$$

where R is in ohms, and F is in Mc.

F. Mc.	R ₁ , R ₂ Ohms	C pF.	L μH.
3.6	300	147	13.33
3.8	200	221	8.88
7.1	300	72	6.74
7.1	200	112	4.45
14.2	300	35	3.37
14.2	50	224	0.56
21.2	100	75	0.74
21.2	50	150	0.37
23.4	100	56	0.56
23.4	50	112	0.28
23.4	25	224	0.14

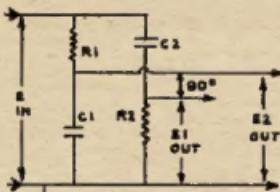


Fig. 2.—"Two-Branch" Type of Phase Shift Network.

At operating frequency F :

$$X_{C1} = X_{C2} = R_1 = R_2$$

and the input $Z = \frac{1}{2}(R_1 - X_C)$
Refer to Table with Fig. 1 for values of components.

RECEIVING ADAPTORS

Phase shift receiving adaptors all operate at a low frequency, normally that of the i.f. channel of the main receiver to which they are attached.

The first type of exciter requires only one r.f. p.s.n., the second type requires an r.f. p.s.n. for each band (where operation is desired); this can produce quite a headache, as will be explained later, on some of the higher frequency bands. Also, with the latter type of

exciter, another matter has to be taken into consideration. This is that each Amateur band occupies a slice of the frequency spectrum, and an r.f. p.s.n., when adjusted for optimum performance at any one frequency, will have a poorer performance if required to operate on a frequency somewhat removed from that channel. This effect is worst on the 3.5 Mc. band, which is the widest band percentage-wise in Australia, i.e. the band runs from 3.5 to 3.8 Mc.; if the r.f. p.s.n. is adjusted to the centre band frequency of 3.55 Mc., a variation of ± 150 Kc. would be required to cover the whole band. This, as a percentage, works out to be $\pm 4.1\%$ of 3.55 Mc.

Frequency changes affect some networks only as far as voltage balance of the outputs is concerned, the two-branch network in Fig. 1 is one such. The voltage unbalance in percentage in this network is equal to the percentage difference between the alignment frequency and the operating frequency. Other networks have both the amplitude balance and the phase shift difference between the outputs affected, the pi network in Fig. 5 is one such. However, on most bands s.s.b. stations operate around some particular part of the band and this minimises frequency shifting.

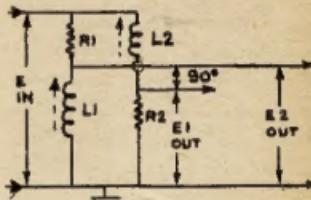


Fig. 3.—"Two-Branch" Type of Phase Shift Network.

At operating frequency F :

$$X_{L1} = X_{L2} = R_1 = R_2$$

and the input $Z = \frac{1}{2}(R_1 + X_L)$

Refer to Table with Fig. 1 for values of components.

The impedance of the r.f. p.s.n.'s used on the Amateur bands range from around 300 ohms down to 50 ohms or lower, the impedance being lowered as the operating frequency is raised, to minimise the effects of stray inductance and capacity of the associated circuitry on the network performance.

Careful consideration should be given to the power level at which the r.f. p.s.n. should be operated.

It must be borne in mind that the outputs from the network provide the switching voltages at their operating frequency to the balanced modulators. Too little voltage restricts the audio input that the balanced modulators can handle before overloading, and consequently restricts the sideband output; too much voltage brings other troubles.

Firstly, almost all networks use resistors, and these components must be non-inductive and so are usually carbon. Should these resistors become heated, due to operation at too high a power level, or for any other reason, they change value, the change is usually permanent, generally the resistor increases in value by anything up to 20%.

The degree of permanence of the balance and phase shift adjustments of any network is no better than the stability of its components, hence changes in the magnitude of any component cannot be tolerated.

In s.s.b. exciters it is common practice to use 5w. or 10w. resistors in the r.f. p.s.n.'s, made up either of single units or 1w. resistors of suitable value in parallel.

Secondly, the greater the power at which the network operates, the greater will be the difficulty in minimising the carrier leakage, both through the balanced modulators, which can be controlled to a certain extent by the carrier null controls, and around the balanced modulators by stray coupling. This latter can only be minimised by shielding and filtering and can be a nuisance.

Between the two extremes lies the optimum operating power level, a little time spent in determining it will pay good dividends and result in a minimum of residual carrier on the transmission, whilst still retaining efficient operation.

In the case of receiving adaptors, the power level of the network should be kept as high as possible, consistent with the ability to minimise the carrier getting through to the audio stages following the balanced modulators. Unwanted carrier voltage on the audio grids can produce distortion and whistles in the output. All adaptors incorporate efficient filter circuits between the balanced mods. and the audio stages, to get rid of the carrier energy. The object in keeping the operating level of the r.f. p.s.n. up, in the case of receiving adaptors, is to provide favourable conditions for exalted carrier type reception which is desirable in these adaptors.

In regard to diode balanced modulators, whether germanium or vacuum tube, the r.f. voltage at which they operate in s.s.b. exciters, should be such for every volt of audio applied to the balanced mods., ten volts of r.f. should be applied. In s.s.b. receiving adaptors vacuum tube diodes should be used, never germanium, and the ratio of the input voltage from the oscillator to the input signal voltage can be raised, even as high as 100:1.

The output voltage required from r.f. p.s.n.'s used with multi-element tube type balanced modulators cannot be laid down as definitely as it can be in the case of the diodes above, the drive required depending upon the tube type and the operating conditions of the stage.

From the foregoing it can be seen that the r.f. phase shift network used in any piece of equipment is to a certain extent determined by the type of balanced modulator circuit it is required to drive.

For instance, diode balanced modulator circuits dictate that the impedance of the associated r.f. p.s.n. drive

circuits to them be around 50 ohms or lower for satisfactory operation. This applies to either germanium or vacuum tube diodes; incidentally, the most satisfactory vacuum tube diode has been found to be the 6ALS.

Balanced modulators using multi-element tubes are, compared to diodes, relatively non-critical in their driving source impedance requirements, so the designer can normally use an r.f. p.s.n. having a somewhat higher impedance.

R.f. phase shift networks can be classified under one of two headings:

(1) Those using two branches each of which has a phase shift of 45°, one advancing, the other retarding the input voltage, to give the required 90° difference between the two outputs.

(2) Networks that derive the 90° phase shift in one operation and use the input voltage, or portion of it, as one of the two output voltages. Figs. 4, 5, 6, 7 and 8 show circuits of this type of network.

TWO-BRANCH NETWORKS

The circuit of Fig. 1 is probably the one most commonly used in phase shift exciters, and in the opinion of a number of people, including the writer, one of the most frustrating to try and adjust. $R_1 = R_2$, and on the 3.5 Mc. band the value is usually 300 ohms. The values of C and L are chosen so that at the operating frequency, their reactance equals that of the resistance wired in series with them, i.e.

$$R_1 = X_C = 300 \text{ ohms.}$$

$$R_2 = X_L = 300 \text{ ohms.}$$

The phase shift of each branch of the network will be 45° and can be verified from the formula:

$$\tan \text{Angle} = \frac{X}{R}$$

where angle = phase shift in degrees.

From the above, $\tan \text{Angle} = \frac{300}{300} = 1 = \tan 45^\circ$.

The input impedance of Fig. 1 is resistive and is equal to R_1 (or R_2).

Figs. 2 and 3 are also two-branch networks. Fig. 2, using resistance and capacity, is to be preferred to Fig. 3, using resistance and inductance. The reasons for this are:

- (1) Inductances have a certain amount of distributed capacity.
- (2) The two inductances would have to be positioned so that their fields would not interact.
- (3) Inductance values are not as convenient to adjust as condenser values, nor can they be varied over so wide a range as easily as condensers.

Each branch of the circuits in Figs. 2 and 3 introduces a phase shift of 45°. It will be noted that the relative positions of the resistive and reactive components of these networks differ from those given for Fig. 1, where both inductive and capacitive reactances are used in the one network.

The circuit of Fig. 2 has been very satisfactorily used in several receiving type s.s.b. adaptors, popular amongst American s.s.b. enthusiasts.

The impedance of the network in this application, at a frequency of approximately 450 Kc., was raised to a somewhat higher value than can be used on the Amateur bands, as the effects

of stray capacity and inductance in the associated circuits upon the operation of the r.f. p.s.n. were much less at the lower frequency. The values of components used were R_1 and R_2 , each 3,300 ohms (lw. 5%); $C_1 = 100 \mu\text{F}$, $C_2 = 75 \mu\text{F}$. micas, paralleled by a 50 pF. variable for network adjustment purposes.

The input impedance of these networks, Figs. 2 and 3, is not a pure resistance, and the magnitude of the reactive component can vary over a wide range as the frequency is changed.

TWIN TUNED NETWORK

Fig. 4 is a network in the second group of r.f. p.s.n.'s, those that produce the 90° phase shift in one operation.

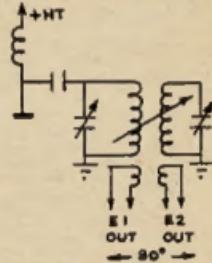


Fig. 4.—Twin Tuned Circuit Network.

The two tuned circuits are each capable of being tuned through resonance at the operating frequency. The two coils are mounted so that the coupling between them may be adjusted until a position is reached where they are critically coupled. Generally, this means that one coil and its associated link is mounted firmly in one position, whilst the second coil and link, which are of similar size and construction to the first, are mounted on a swivel bracket. The position of this coil is varied during the adjustment of the network and when the correct position is obtained the bracket is locked in position.

The two circuits are adjusted so that one is detuned on the h.f. side of the operating frequency, and the other on the l.f. side, to a point where the voltage delivered from each circuit is 70.7% of that which is obtained when the circuits are tuned to resonance.

Under the foregoing conditions, when the coils are critically coupled, the voltage outputs from the two links are 90° apart in phase and equal in amplitude.

The adjustment of this network (Fig. 4) always takes some time and as can well be imagined a considerable amount of fiddling with it is required in the initial stages. The higher the operating frequency, the trickier it becomes in adjustment. A number of coil positions have to be tried in succession and notes kept on the performance obtained at each position, finally the optimum position is arrived at.

This type of phase shift network is widely used in s.s.b. excitors operating at a fixed frequency of 5 or 9 Mc., and working on the heterodyne principle to obtain signals in the Amateur bands.

The two output circuits being links, have a low impedance, and it is common practice to use this type of r.f. p.s.n. to feed balanced modulators utilising diodes.

PI NETWORK

The network shown in Fig. 5 is a single section l.p. pi filter, terminated in its characteristic impedance.

Pi networks can be used for two purposes:

- (a) Impedance matching,
- (b) Phase shifting.

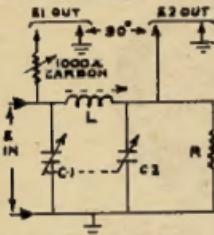


Fig. 5.—Pi Type Network.

At operating frequency F :

$$XC_1 = XC_2 = XL = R$$

and the

$$\text{Input } Z = R.$$

Refer to Table with Fig. 1 for values of components.

The normal pi couplers and interstage tuning circuits used by the Amateur fraternity come under the first category, whilst the circuit in Fig. 5 comes under the second.

It is emphasised now that this circuit, when properly adjusted, is not tuned anywhere near resonance at the operating frequency. It is a single section low pass pi filter, which, when used on the various bands with the constants given, will produce a 90° phase shift at the operating frequency.

When a l.p. pi network is used at a frequency, 0.707 times its designed cut-off frequency, and terminated in its characteristic impedance, a phase shift of 90° occurs between its input and output terminals.

The 1,000 ohm carbon potentiometer in series with the lead to "E1" output (in Fig. 5) is to allow compensation to be made in the "E1" output circuit for any loss that occurs in the filter feeding the "E2" output. It is the amplitude balance control for the network and is initially set at minimum, frequently only a fraction of the resistance available is required, and on occasions the circuit has been operated reasonably satisfactorily without the potentiometer.

The pi filter has one good feature, the stray circuit capacities fall across

the input and output capacities of the filter and can be compensated for by reducing the value of those components by the required amount. This is in direct contrast to the two-branch type of networks, where stray capacitance in the associated circuits results in a degraded performance of the p.s.n.

The pi filter also discriminates against harmonics which can be a handy feature.

A disadvantage of the pi type network is that if operation is undertaken on a frequency differing from the frequency it was adjusted to operate at, both the phase shift and the voltage amplitude balance are affected.

However, this network, once the proper constants have been found, has proved itself to be very easy to adjust, the writer having used one for some time with excellent results.

The pi network in some s.s.b. circles has been rather disparagingly spoken of. The writer is of the opinion that a number of people have condemned the circuit without ever trying it.

TUNED PI NETWORK

In Fig. 6 is shown another pi network. This unit is a tuned pi network and is known by that name. The circuit has not had a great amount of use in Amateur circles, probably because it is not well known. It differs considerably in its operating conditions to the pi network of Fig. 5.

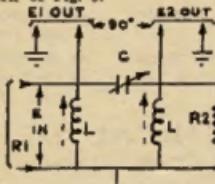


Fig. 6.—Tuned Pi Network.

The basic relationships for Fig. 6 are given from the formulae:

$$E_{\text{out}} = \frac{E_{\text{in}} J R_2}{Z}$$

$$\text{where } Z = \sqrt{\frac{L}{C}}$$

$$\text{and } (2 \pi F)^2 L C = 1$$

$$R_1 = \frac{Z^2}{R_2}$$

$$F = \text{operating freq.}$$

$$J = \sqrt{-1}$$

From these it can be seen that the input is a pure resistance and that the amplitude balance can be adjusted by variation of the load resistor R_2 . When R_2 changes the input impedance stays resistive, and the phase shift between E_1 and E_2 does not change from 90°.

The circuit is operated, tuned to resonance at the operating frequency.

The circuit when designed for a low impedance, say 100 to 200 ohms, practically ensures correct phase shift when tuned to resonance, and the amplitude balance is capable of control independently of the phase shift. For use on 3.6 Mc., the constants for the circuit in Fig. 6 are $C = 330 \text{ pF}$, L_1 and L_2 each $3.3 \mu\text{H}$, slug adjusted; $H_2 = 200 \text{ ohm}$ variable carbon pot, R_1 approximately 150 ohms.



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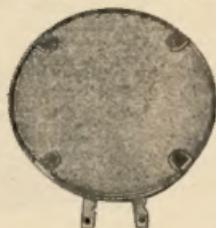
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This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

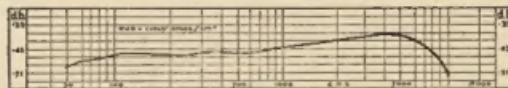
When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1½" diameter (rear), ⅝" thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.
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Modifying the AR7 Receiver

PART FOUR

MAKING A 10-METRE COIL BOX

This section will be devoted to the making of a 10 metre band coil box and its alignment procedure. At the time when this coil box was made, the 33 Mc. beacon stations were still operating and as these were a guide for "break-throughs" on 50 Mc., the range was extended to cover this frequency. However, when you decide to tackle the task it is only a matter of altering the ratio of each air condenser to cover whatever you may wish to have.

As it was desired to keep the receiver coil boxes intact, another Band A box was bought and the coils removed and put away for r.f. chokes (that's only my Scotch ancestry, you may feel disposed to pitch them into the waste paper basket). Take care when removing the unit that the small bakelite spur, which holds the coil upright, does not get broken for this is exactly the size to support the new coil.

Freq. Range		Bandspread	
Dial Reading	Freq. Mc.	Dial Reading	Freq. Mc.
462	28	224	28.0
340	28	220	28.1
276	27	215	28.2
224	28	210	28.3
175	29	205	28.4
132	30	200	28.5
91	31	195	28.6
53	32	190	28.7
22	33	185	28.8
		180	28.9
		175	29.0

A set of 28 Mc. band coils manufactured by R.C.S. for their multiband unit was purchased and modified for the purpose. As this would be at least seven years ago, these coils may not be available now, so the exact details of each coil will be furnished in the text and by diagram. The location of the connecting wires can make quite a difference to the ultimate performance on this band.

A-band coil box has not a second aid trimmer, so four 21 pF plate condensers were obtained from disposals and installed into the vacant positions for C2, C4, C6 and C8. If these are not available from any source, it may be possible to obtain small Eddystone trimmers and make up the necessary capacitance with good silvered mica or special ceramic types with zero coefficients. Maximum capacitance range should be about 70 pF.

Before mounting the condensers make sure that the rotor contacts are clean and fit tightly, for very slight movements due to vibration can make the alignment a nightmare if there is the least bit of sloppiness. That same

warning goes for all the components and rigid mounting of the coil and its associated wiring is of prime importance. Use bare tinned copper wire for all the leads, keeping them well away from each other if not tied to the same point. The primary winding on each coil may be wound with enamel covered wire—make sure that there are no dry joints, that's all!

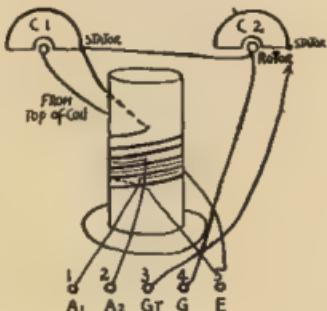
Do not be tempted to add extra turns to the plate "tickler" winding on the oscillator coil or you may find that

BY G. M. BOWEN,* VK5XU

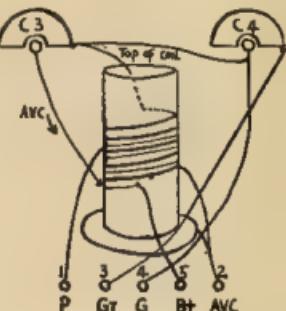
From the way that the receiver performs on this range, there does not seem to be any point in trying to use iron dust cores. They generally only add mechanical troubles and if R.C.S. and other manufacturers with more design equipment than most of us have at our disposal, still use air core for these higher frequency ranges, then maybe it's a good thing to follow suit.

Spread the turns if necessary or use a short-circuit turn as the National does.

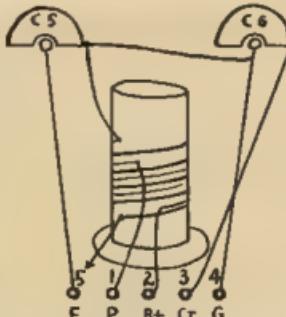
AERIAL



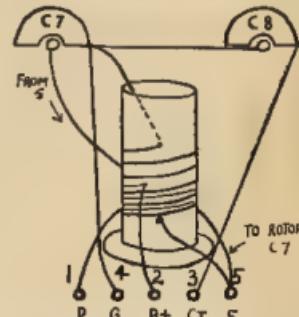
R.F.



MIXER



OSCILLATOR



suddenly the oscillator will jump frequency as the plate circuit takes control (being usually of a higher Q than the grid coil with its 50K resistor across it for bias).

The diameter given for the grid coils, is taken across the outside of the windings. Some adjustment of the length of the coil may be necessary to obtain the range required, but generally all but major shift can be accommodated by adjusting the two air trimmers.

Alignment procedure follows the system used for Band E coil box but with these preliminary steps. The oscillator unit is adjusted to cover the range required either with a modulated oscillator or frequency meter. Unfortunately it is not possible to use a grid-dip meter with these coils for very obvious reasons. Getting the oscillator on the high side of the signal is a little tricky because with the output of the modulated oscillator attached to the grid of the ECH35, there is practically

* 73 Portrush Road, Toorak Gardens, S.A.

no selection of the frequency by the mixer coil.

A good tip is to always swing the mod. oscillator down from the high frequency end until the signal appears and then, continuing on to about 900 Kc. lower, the signal that is wanted should appear.

If the condensers are similar to those described in the text, then the settings in the coil date will allow a fair setting to start the alignment.

The conversion cannot be hurried, so be prepared to spend quite a lot of time without becoming discouraged. Aligning a new set of coils can take up to four hours—so good luck. When it has been done you will be satisfied.

The next article will have the band-spreading of the E band coil included, so you may prefer to leave the alignment of this band F coil box until then.

COIL DATA

Aerial—

Grid: 5 turns No. 22-24 tinned copper, $\frac{1}{2}$ " outside diameter of coil; length 5/16"; polystyrene tubing; air core.

Aerial Coupling: 2 turns No. 40 silk covered and interwound as shown.

C1: 18 plate; 8 stator, 9 rotor, air trimmer.

C2: 21 plate; 10 stator, 11 rotor, air trimmer.

R.F.—

Grid: 5 turns No. 22-24 tinned copper, $\frac{1}{2}$ " outside diameter of coil; length 5/16"; polystyrene former; air core.

Plate Coupling: 3 $\frac{1}{2}$ turns No. 40 silk covered and interwound; air core.

Flat available for married man.

C3: Same as for aerial box; half in mesh.

C4: Same as for aerial box; three-quarters in mesh.

Mixer—

Grid: 5 turns No. 22-24 tinned copper, $\frac{1}{2}$ " outside diameter of coil; length 5/16"; polystyrene former; air core.

Plate Coupling: 3 $\frac{1}{2}$ turns No. 40 silk covered and interwound.

C5: Same as before; half in mesh.

C6: Same as before; seven-eighths in mesh.

Oscillator—

Grid: 5 $\frac{1}{2}$ turns No. 22-24 tinned copper; $\frac{1}{2}$ " outside diameter; slightly longer than 5/16"; spread to obtain correct inductance value; air core.

Plate "Tickler": 2 $\frac{1}{2}$ turns No. 40 silk covered; interwound as shown, starting below the grid coil.

C7: As before; one-eighth in mesh.

C8: As before; three-quarters in mesh.

N.B.—C1-C8 do not correspond to values in the AR7 circuit diagram, but only to this article's diagrams.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. Cnt- No. ries	Call	Cer. Cnt- No. ries
VK3JTH	26 123	VK3EJW	1 183
VK3JU	13 123	VK3EY	1 183
VKAJF	21 123	VK3EW	4 180
VK3ERU	2 128	VK3ERW	23 147
VK3HZ	3 176	VK3ELN	11 141
VK3EE	10 183	VK3EJE	7 140

C.W.

Call	Cer. Cnt- No. ries	Call	Cer. Cnt- No. ries
VK3KHB	10 228	VK3KXZ	29 210
VKAJF	20 224	VK3SY	45 183
VK3BZ	6 222	VK3EZO	3 183
VK3HR	8 218	VK3SYL	35 178
VK3EH	12 218	VK3SYZ	8 178
VK3XU	46 213	VK3ESU	18 178

Amendments

VK3JE	21 145	VK3ERJ	43 128
-------	--------	--------	--------

OPEN

Call	Cer. Cnt- No. ries	Call	Cer. Cnt- No. ries
VK3ACK	5 228	VK3EJE	12 210
VK3HR	7 223	VK3EHG	3 201
VKAJF	32 223	VK3EJS	16 195
VK3BZ	4 221	VK3EKL	10 178
VK3XU	61 221	VK3EYW	12 171
VK3EJ	8 218	VK3EDII	2 170

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ROSS HULL MEMORIAL V.H.F. CONTEST, 1957-58

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian and Overseas Amateurs and Short Wave Listeners to participate in this annual contest which is held to perpetuate the memory of the late Ross Hull whose interest in v.h.f. did much to advance the art.

A handsome Perpetual Trophy is awarded annually for competition between members of the W.I.A. in Australia and its Territories, inscribed with the name and life work of the man whom it honours. The name of the winning member of the W.I.A. each year is also inscribed on the Trophy. In addition, this member will receive a suitably inscribed, framed photograph of the Trophy.

Objects: Amateurs in each call area (this includes those in Australian Mandated Territories and Antarctica) will endeavour to contact Amateurs in all other call areas and overseas. (VK1 and VK2 will be considered to be one call area.)

Date of Contest: 1st December, 1957, to 31st January, 1958.

Duration: From 0001 hours E.A.S.T. 1st Dec., 1957, to 2359 hours E.A.S.T. 31st Jan., 1958.

RULES

1. There shall be three main sections to the contest:

- (a) Transmitting phone.
- (b) Transmitting open.
- (c) Receiving phone and c.w.

2. All Australian and Overseas Amateurs may enter for the contest whether their stations are fixed, portable or mobile.

3. All Amateur v.h.f. bands may be used, but no cross-band operating is permitted, with the exception that 50-54 Mc. and 56-60 Mc. will be considered to be the same v.h.f. band for overseas contacts.

4. Amateurs may enter for one of the above sections listed in Rule 1. An "open" log will be one containing both phone and c.w. contacts.

5. Only one contact per station per band is allowed each calendar day and arranging schedules for contacts on other bands is not permitted.

6. Only one licenced Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licences.

8. **Cyphers:** Before points may be claimed for a contact serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (telephony) or RST (c.w.) report plus three figures which may begin with any number be-

tween 001 and 100 for the first contact and which will increase in value by one for each successive contact, e.g. if the number chosen for the first contact is 053, then for the second contact the number will be 054, for the third 055, and so on. If any contestant reaches 999 he will start again with 001.

9. Entries: Entries must be set out as shown in the example, using only one side of the paper. Entries must be postmarked not later than Saturday, 1st March, 1958, and addressed to the Federal Contest Committee, W.I.A., Box 1234K, G.P.O., Adelaide, South Australia.

10. Scoring: Scoring will be based on the table shown herewith.

11. Logs: All logs shall be set out as in the example shown and in addition will carry a front sheet showing the following information:

Name Section
Address Call Sign

Claimed Score

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest.

Signed Date

12. The right is reserved to disqualify any entrant who, during the contest, has not observed regulations or who has consistently departed from the accepted code of operating ethics.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. Awards: Certificates will be awarded to the winners of the transmitting and receiving sections in each VK and Overseas call area. Further certificates may be awarded at the discretion of the Contest Committee. A certificate will be awarded to the contestant returning the highest score in the transmitting sections.

The highest VK scorer who is a financial member of the W.I.A. will hold the Trophy for a period and in addition will receive an appropriately inscribed photograph of the Trophy.

RECEIVING SECTION

1. The rules are the same as for the transmitting section and it is open to Short Wave Listeners in Australia and Overseas.

2. Contest times and logging of stations on each band are as for the transmitting section.

3. To count for points, logs will take the same form as for the transmitting section but will omit the serial number received. Logs must show the call sign of the station heard (instead of worked), the serial number sent by it, and the call sign of the station being called.

Scoring will be on the same basis as for transmitting stations. It is not sufficient to log a station calling CQ.

4. A station heard may be logged only once per calendar day per band for scoring purposes, but additional reports will be of value to the F.C.C.

5. **Awards:** Certificates will be awarded to the highest scorer in each VK and Overseas call area.

SCORING TABLE

	VK1	VK3	VK4	VK5	VK6	VK7	N.T.	VK9	ZL1	ZL2	ZL3	ZL4	Overseas other than ZL
VK1-VK2	-	5	4	2	10	4	6	10	7	7	7	7	10
VK3	5	-	4	4	9	10	6	10	7	7	7	7	10
VK4	4	4	-	5	10	7	3	7	7	8	8	8	10
VK5	2	4	5	-	7	5	3	10	8	8	8	8	10
VK6	10	9	10	7	-	10	10	10	10	10	10	10	10
VK7	4	10	7	5	10	-	7	10	7	7	7	7	10
N.T.	6	6	3	3	10	7	-	3	10	10	10	10	10
VK9	10	10	7	10	10	10	3	-	10	10	10	10	10
ZL1	7	7	7	8	10	7	10	10	-	-	-	-	-
ZL2	7	7	8	8	10	7	10	10	-	-	-	-	-
ZL3	7	7	8	8	10	7	10	10	-	-	-	-	-
ZL4	7	7	8	8	10	7	10	10	-	-	-	-	-
Overseas other than ZL	10	10	10	10	10	10	10	10	-	-	-	-	-

The score for the first contact with any particular call area on each band will be that shown in the above table. For each subsequent contact with the same call area on the same band the score will reduce by one point until the contact value reaches 1, when all further contacts with that call area on that band will retain this value.

In addition a bonus of 20 points may be claimed for each new call area worked on each band.

EXAMPLE OF TRANSMITTING LOG

Date/ Time E.A.S.T.	Band	Emission	Call Sign	RST/NR Sent	RST/NR Rev'd.	Call Area Bonus	Points Claimed	Blank

NOTE. The standard W.I.A. Log Sheet follows the above form.

EXAMPLE OF RECEIVING LOG

Date/ Time E.A.S.T.	Band	Call Sign Heard	RST/NR Sent	Station Called	Call Area Bonus	Points Claimed	Blank

NOTE.—The standard W.I.A. Log Sheet follows the above form.

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C.D.E.N. NEWS

We are pleased to welcome Roy Hart, VK2HO, to the ranks of Divisional Co-ordinator of the Boy Scouts at the Commonwealth Civil Defence School with power valuable in guiding the N.S.W. boys towards the ultimate aims of the combined emergency services. Jim Corbin, VK2YC, no doubt, will appreciate the rest from the strain imposed during his long term of office.

Other stations continuing to follow in the steps of VE4 may obtain from their State Emergency Directors loan of films suitable for screening at Institute meetings. Members of the Institute, whether active in C.D.E.N. or not, will learn much from these films.

Equipment for emergency use can be relatively simple, however it must be efficient, stable and rugged. Components used should be of types which are available readily and substitutes can be obtained while readily moving in the same space. Obviously for quick transfer between fixed bands crystals are a must, however provision must also be made for v.f.o. operation.

The foregoing does not mean that equipment need be elaborate or complicated. Even if some commercially minded people do sneer at the finished product it is the results that count. Your Publications Committee would appreciate the incorporation of publishing ar-ticles covering suitable equipment.

Irrespective of the outcome members of VK4 and VK8 are to be applauded for their persistent efforts to reach the father of a very sick Melbourne boy so that he could speed home from New Guinea to comfort his boy. This was done when the man in charge of the receiving end could not be expected to be aware of impending emergency. However, it does stress once again the need for local Hams to be in readiness whenever there is any indication of an emergency developing in any form. Operators due to weather in the main should at least preceded by weather forecasts which serve as a warning. Just as, generally speaking, conditions suitable for bush fires do not develop overnight.

Naturally such things as explosions, freak clouds, bushfires, cyclones etc. do not affect the coming event. In such cases we can only be expected to assess the communications

requirements and commence operations as quickly as possible. This means that the greater the number of operators who can leave a receiver running on the emergency calling frequencies of 3581 and 7003 Kc., the greater the possibility of establishing quickly.

The easiest way of ensuring that the greatest number will hear an emergency call is to adopt the system of employing an adaptor which feeds into the family receiver i.e. stages in the antenna having the greatest majority of the day so that a call on the frequency immediately impinges on the local programme, enabling the YP to carry out previously laid down drill for such events.

In the evening of course the OM only has to put down his newspaper and loll out to the shack, unless of course he is one of those fire-side individuals with remote control from the fireside.

Federal Co-ordinator, W.L.A.

REMEMBRANCE DAY CONTEST.

Have your equipment ready for this Contest on 17th and 18th August. See the June issue of "A.R." for Rules; also additional rule in July issue page 18.

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THE 1957 EDITION CONTAINS—

YL CORNER

BY PHYL MONCUE*

A CONVERTER FOR THE XYL

Several QMs have come along to me and said they wish I would have a talk to their XYLs and try and make them see the right side of the radio. Right now the main point is "You seem to be able to put up with it but my wife just can't stand any part of it." Well here it is, but is directed more at the QMs than the XYLs.

Please and foremost, don't try to rush her, give it to her small doses. Just throw the handbook down in front of her and tell her to read that. After all her cook-book wouldn't look very interesting to you, now would it? Say to the great Einstein were to print a theory of relativity in front of you, would it mean anything to you? No, of course it wouldn't. But should the great Einstein explain it to you, little by little, it would then become mighty interesting, wouldn't it? So you just pretend you're the great Einstein and really try and help her to learn what it's all about.

Don't be too jealous with your precious hobby, share it with her, let her do some of the wiring and perhaps wire up a converter for mobile work, that's bound to appeal. But make sure it works even if you have to re-wire it yourself sometimes when she's not around.

Teach her the code. Most women take very easily to c.w. and you'll probably find after practice, she'll be able to beat you at it. That's not to say she can learn it quickly, but give her a sense of achievement. C.w. can be very handy as a means of conversation when you don't want the children to know what you're talking about. We use it at our QTH but our harmonics relate only to talking in c.w. and we can't hear them.

Explain to her the elementary things about radio and keep getting a little further advanced with your chats and you'll find it will grow on her, but guard against giving it to her in big doses as you'll only give her a headache. Be kind and patient when she's slow to comprehend, and above all, never be sarcastic when her efforts at building aren't so hot.

* 235 Union Road, Ascot Vale, Vic.

Teach her the Q codes and other abbreviations so that she can better follow the conversations on the air. When there's a contest on, give her a part in that too. Keeping the log or writing out the QSLs will keep her interested and a contest can be really exciting when the results are in, even to an XYL. Helping you to recognise faint c.w. signals (even though you know darn well what they are) will bound to appeal to her and make her feel very important and necessary.

Try getting her to come along to the transmitter house picnics and barbecues for the XYLs. I've met other XYLs there and if she drives the car, let her do the driving even if she can't drive the car as well as you think you can. The very driving of the car will, as well as probably giving her a lot of enjoyment, make her feel that she is playing some real part in it and is necessary to you. If she tries to start the car off in top gear, don't do your jolly, sharp probably only trying to teach her how to start the engine like a stick. And if she grates the gears and you mind greatly then for Pete's sake keep your audio down, she may not have very great selectivity with the gear stick, but she's probably got high selectivity of feelings.

If she doesn't drive the car, let her be the navigator and teach her to tune in the signal and line the beam up on it. Forget that this teething period will probably cause you to come last in the next few hunts, but that part of it is not nearly so important as being able to do something together and in time she'll probably turn out to be a real help to you.

Try and be tidy with your equipment, particularly if the children happen to be staying one end of the living room. There's nothing that turns an XYL off Amateur Radio more than untidy radio gear all over the house.

Actually getting a licence will, in most cases, be a bit easier than the normal XYL who has forgotten any maths she ever had and with a normal maniacal tendency which can affect an enormous amount of time and study necessary. But it's really not essential for her to be licensed for the two of you to enjoy your hobby together, but make sure she feels it's her hobby too.

Oh, and remember, there are other things in the world besides Amateur Radio! Don't forget to take her out sometimes to places where she likes to go, even if it happens to be to the baller or the theatre, and the thought of it might kill you; just make sure you don't kill her with an overdose of Amateur Radio.

Well there it is Einstein, go to it and good luck!

S.W.L. SECTION*

Once again I begin my monthly grouch. No doubt you will guess what it's about. You do say right back to correspondence, "you do see the notes it is only because of the Editor's kindness (fine chap I might add) as they are supposed to be in by the 8th of the month. I've held off until now, the 8th, but also no man's got time, and only one reader receives them from this. So come on, change, pull your socks up and let's see a little more interest in this page, or else! Or else we'll have to give it up, see! Now after this diatribe of woe, we will proceed to my next complaint.

You may have noticed that last month I said things had almost become normal now. Well they haven't and I think somehow they won't. My trouble is that when I'm ready to do a bit of writing, the writing's not there. My manicure is either asleep going to sleep or awake and has to be watched or nursed or something. No evening's sw.ling is therefore forthcoming. Secondly, early in the morning the phone wake me up saying "OK you're on". Well that means that I don't get out of bed early and listen then either. As a result I am currently not hearing anything much at all.

VICTORIA

June Group Meeting.—This meeting was well attended, about 16 members being present. The first portion of the meeting was devoted to a discussion of future activities. Many good ideas were put forward and arrangements made for voluntary visits to points of interest. Some time was spent discussing a receiver building project for the Group. It was decided that two small super-regen type receivers would be built. A donation of a disassembled V.H.F. rig from George SWJ and an old super-regen from the Victoria Division had provided a good supply of parts to allow work to be commenced.

Future Programme.—A visit to the Newport Power Station has been arranged for the 13th August. As far as the exact number who will be attending has to be known, anyone who wishes to attend is requested to ring the Group Secretary, Ian Hunt, at FB2081, Ext. 311, no later than the 7th August.

Visit to TV Station HSV.—This visit will be held on the 20th September. As far as the exact number in the party must be known, you must contact the Group Secretary. Preference will be given to those who put their names down for the G.T.V. visit, which, unfortunately had to be cancelled.

Annual Group Meeting.—This will be our annual meeting and election of office-bearers for the next 12 months. So come along and we'll find a job for you. At this meeting we will be entertained by Noel SANS, who will show us some of his built-ups and some shots taken during the Group visit to D.C.A. at Epsom Airport. More arrangements are being made for interesting talks and visits, so keep your eye on this column and listen to the SWL Sunday broadcasts for further announcements.

SOUTH AUSTRALIA

John Campbell, WJA-L811, tells us more of the June Group meeting. Normal business was suspended to allow members to visit broadcast station SDN. Arriving at the studios in North Adelaide, the members found Jim Paris, who they thought had probably become lost or something, but had instead gone there direct. Their look over the studios proved most interesting and then they went out to Dry Creek to examine the T.V. The degree of automation in operation surprised everyone. An engineer is duty at the t.v. and even the air-conditioning plant can be turned off and on by a telephonic circuit from the studio.

Many thanks are due to Warwick SPS for arranging and putting on such a good show. John mentioned something about the "Big Broadcast" in the State, something he'd never heard before. John also told me that he has now 115 countries verified — 10 of the 110 countries about 25 have been verified on the Ham bands.

Well chaps, this brings the notes to an end again for another month and if I don't receive some mail soon, probably to an end for good. Why not send me email, or if you prefer to post you could allow me to write you up as SWL of the Month, and help me continue this feature. I haven't the time to run around Melbourne interviewing chaps all the time I'm afraid, and besides it's cold weather now. So till next month I'll try to check in to all and begin watching for the next issue.

* Compiled by Ian J. Hunt, WJA-L3007, 311 St George's Road, Northcote, N.S.W. Vic.

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EMERGENCY NETWORKS

Editor "A.R." Dear Sir,

It would be wrong to detract from the commendable sense of romance apparent in much that VK3EC has said. One does not need to be a "fanatic," however, to detect in his remarks about telegraphy a fallacy which is usually based upon inexperience.

In some 20 years of emergency communication circles which have required proficiency in both modes of transmission, it has seemed to me that the following can be stated as a general rule: In cases of operational urgency, provided it is possible to give a good circuit disturbance-free signal, telephone is best suited to act upon information exchanged, telephony is the obvious choice. But the ship's master, the aircraft pilot and the doctor can be busy people in an emergency. Now, with inter-modulation involved, accuracy usually demands that information be received together with evidence of its origin. And for both speed and accuracy in this respect, well-handled telegraphy can "clear the hook" while the other oral talker is still trailing off at the lowest. It does not take much effort to cultivate the slow, steady Morse with which an cut-station can still communicate in conditions which render R/T useless.

It is interesting to note that a recent job of evaluation by the U.S. Navy produced conclusions rather like those stated above.

Instances like the sad and potentially dangerous antics of the Army net observed by VK3EC are unfortunately common. But the illiterate need to different equipment they also serve to show that no equipment and no organization can be better than its operators. A resourceful type I once knew tramped for some weeks through the scrub after a few gunboats had left him only to find a good deal in river sand! And it will take me some time to forget the Navy operator who blamed the rest of the net for the fact that his own carrier was running . . .

By all means let us study Service Examples and where possible copy them. But let us illustrate need also. I suggest to events for ourselves that devaluation in advanced the skills that people can be trained to employ for the specific purpose of passing information between A and B, using a reasonable minimum of equipment. This is not difficult if the right key can be used. It will be found that some assumed necessities can be done without. We can only guess at the nature, let alone the magnitude, of emergencies that could beset us. Let us leave the guesswork in that department.

—W. W. Watson, VK3YY.

Editor "A.R." Dear Sir,

The letter by VK3EC in the July issue of "Amateur Radio" prompted me to continue this discussion on Emergency Networks.

I am in complete agreement with all the points expressed by the writer, particularly in regard to the standard of equipment used. In emergency service there is absolutely no room for compromise. Reliability is not just a key word, 100% reliable and maintained ready at all times for immediate use. An operator who, on being called to an emergency, has to raid around with odd bits of wire and a soldering iron before his gear is up and in operation is a liability to the emergency service. Neither can the use of anything but the best in commercial, ex-service, or home constructed equipment be expected to inspire confidence in the minds of the authorities, and all those connected with an emergency operation.

In connection with the proper set-up for Emergency Stations, several points come to mind. For instance, how many Base Stations, or even smaller stations, particularly those in City Areas, would be able to carry out their duties and operate full power if the s.e.c. power lines were put out of action? How many of these stations have on hand, or have made arrangements for connecting to emergency power plants? How many Base Stations have a telephone connected to the operating room? This is essential.

For operation in the field, are there any units which can operate full power for any length of time at an isolated base? Battery charging facilities may not be available, and conditions generally may require maximum power for effective communication.

For mobile operation all equipment, both transmitting and receiving, should be xtal controlled. Xtal control is important for all equipment. In the case of transmitters, it is particularly necessary for mobile use. Admittedly there is some quite good mobile gear in use which does not incorporate xtal control in the receiver, but it would be the better if it. If xtal control is not available in the receiver, facilities for setting to the transmitter frequency are essential. Dial locks would also be advantageous.

Portable equipment of the "Handle-Talkie" type appears to be receiving some attention, both in a.h.f. and v.h.f. This equipment should be of a sturdy design similar to all other gear. VK3EC's remarks should be carefully noted.

It may be argued that some of the suggestions made above are unnecessary and extravagant. However, all of these ideas, which should definitely be considered necessary in an efficient Emergency Network, are due to particular needs which will not be met up to date in work with another emergency organisation. It may also be argued that the cost is far too heavy for the average Amateur, and if such equipment is necessary, Amateur participation would not be so favourable for the world. I suggest that any Amateur in Emergency Service should first decide his capabilities, and then direct his activities accordingly. The most important thing is that no matter whether the choice is made of Portable Base Station, Mobile, Portable, etc., the Amateur should make himself proficient in this field, and provide and maintain suitable gear of the highest standard.

Regarding emergency operation generally, it might be well to remind Amateurs, particularly metropolitan ones, that while VK3EC claims there is already a State-wide voluntary emergency organisation which is reasonably well set up and operates fairly efficiently.

This organisation is concerned mainly with bush-fire emergency work. During the summer season operations are on call continuously, and the organisation "works" during the remainder of the year. Most Regions hold weekly or bi-weekly "shops" in order to maintain their equipment at full efficiency. These operators would no doubt be very willing and would probably be expert in the use of amateur equipment in emergencies. Therefore in order to avoid confusion and unnecessary duplication of equipment and personnel the setting up of effective and reliable liaison between emergency organisations should be of paramount importance. One way to do this, if successful, is to establish a new Amateur C.D.E.N. and vice-versa.

I trust that this letter will encourage further discussion on this matter.

—James R. Barber, VK3JABT.

EDITORIAL

Editor "A.R." Dear Sir,
I take exception to the article in "A.R." July '57, "Single Sideband—is it better than Amplitude Modulation?"

I feel that WSCR has misrepresented facts and in the case of signal/noise ratio, jugged his mathematics to achieve his desired

result. May I give my version of signal-to-noise ratio and criticize other aspects of the article?

In the case of receiving a 100w. s.a.b. signal on a receiver of 3 Kc. bandwidth the signal-to-noise ratio will be 100 divided by P_{N_0} .

In the case of receiving a 100w. d.a.b. signal on a receiver of 3 Kc. bandwidth the signal-to-noise ratio will be 50 divided by P_{N_0} .

In the case of receiving a s.a.b. signal on a receiver of 8 Kc. bandwidth the signal-to-noise ratio will be 100 divided by P_{N_0} , and on d.a.b. in 8 Kc. also, 100 divided by P_{N_0} . These figures tell what the receiver bandwidth is changed to for the signal being received, i.e. 3 Kc. for s.a.b. and 8 Kc. for d.a.b., there is a 2 db. advantage to s.a.b.

WSCR points out that the main disadvantage of receiving d.a.b. is the phase requirements of the reinserted carrier. This also indicates the reason why s.a.b. signals with poor sideband suppression are so hard to tune in on some receivers. He then mentions phase locking circuits but apparently suggests that they are so simple as to warrant no further mention. He rather suggests we go over to s.a.b. reception of the d.a.b. signal. This is in effect throwing away 3 db. of his peculiar brand of reasoning he tells us is not wasted because it is there IF needed.

He later mentions d.a.b. adaptors for the receiver and tells us there are beyond the scope of his article and has been in a previous paragraph dismissed phase locking circuits in favour of s.a.b. reception.

His remarks on average QRM on a Ham band being the same for s.a.b. or d.a.b. seem to have completely overlooked the fact that this was the case considering only if the receiver was simultaneously receiving a spectrum as wide as the Ham band in question. As a practical receiver receives only 3 to 10 Kc. at a time the average QRM is not important so much as instantaneous QRM on the frequency the receiver is on.

Of his three points in conclusion, I would suggest that point 1 should read—s.a.b. has a 3 db. advantage over d.a.b. (suppressed carrier); point 2, s.a.b. will reduce QRM; point 3, while s.a.b. is more difficult to generate than d.a.b., it is not so severely over-modulated.

I feel that I should point out the difference in receiving a good s.a.b. signal and a good d.a.b. suppressed carrier signal.

In receiving s.a.b. the reinserted carrier at the receiver must be reinserted at least within 80 cycles of the correct frequency.

In receiving d.a.b. the carrier must be reinserted within 10 cycles of the correct frequency, and must have the correct phase relationship to the sidebands.

In the alternate case of receiving d.a.b. on a s.a.b. receiver the frequency is not so intolerant, and the phase requirement is no longer so difficult. But the receiver must be capable of rejecting the unwanted sidebands by at least 25-30 db.

No doubt s.a.b. versus d.a.b. or a.m. will serve a good purpose in airing points of view and all that, but my suggestion that nothing but harm will be done to any country by distortion of facts and arguments to achieve certain preconceived conclusions.

—Cyril Edmonds, VK3AAE, s.s.b.

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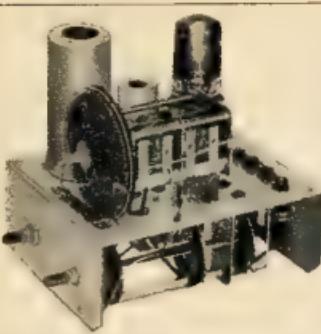
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FEDERAL, QSL, and



DIVISIONAL NOTES

FEDERAL

RESIGNATION OF THE FEDERAL COUNCILLOR

Federal Executive has been notified of the resignation of VK1ASW, Don Pollard, from the position of Federal Councillor of the New South Wales Division.

Although Don did not hold this position for a very length of time, he was well known in those circles of our own Division because of his frequent journeys Interstate. Besides this it was during his term of office that he made a trip overseas. Now that he has more time for Radio, it is hoped that the call VK1ASW will be heard regularly on the bands.

AMATEUR STATION AT JUBILEE JAMBOREE

Federal Executive has been notified by the Boy Scouts Association in England that during the Boy Scouts' Jubilee Jamboree (August 1 to 17) at Sutton Park, Sutton Coldfield, an Amateur Radio Station under the call of G3BSP will be in operation.

Special facilities have been granted by the British Postmaster-General, including permission to radiate a "News Bulletin." This news service will be radiated on various frequencies "on the hour" between 1900 hours and 2300 hours G.M.T.

As the station will be carrying out the normal operating activities at other times, the Scouts are looking forward to making contacts with DX stations. They hope by means of special radiations beamed to suit conditions to reach neutrals. All interested are asked to listen for the call G3BSP on bands from 3.5 to 30 Mc.

FED. CONTEST COMMITTEE

REMEMBRANCE DAY, 1967

This month, once again, we are celebrating Remembrance Day with the Contest founded to bring friends together, old and young, to honour our Friends who died in Active Service for us all.

Surely a sobering thought, when one recalls that V.P. Day was twelve years ago and that many of our present Amateurs were too young to feel the joyous relief that the war older ones felt when victory was proclaimed.

Federal Council's decision to ask for a period of quietness and an appropriate address from the President of Federal Executive prior to the commencement of the Contest should place the Contest in its right setting—A Memorial.

The checking of the logs last year disclosed that some contestants were not operating "in the true spirit of the Contest."

Surely the greatest joy comes from working with and meeting again as many old friends as possible; from welcoming to our ranks all those who have had the opportunity of meeting before; of giving to our younger generation the feeling of unity that is Amateur Radio; and above all from keeping alive the memory of those whom we honour, and of whom we may truly say,

"Greater love hath no man than this, that a man lay down his life for his friends."

BOSSES HULL MEMORIAL CONTEST RULES

These have been changed following the discussions which took place at the Federal Convention. The draft has been based on the recommendations made by Federal Council and on suggestions received per letter from those who have been active v.h.f. participants for many years.

As the 1967-68 period is likely to have conditions which will favour distant contacts of over 1400 miles, your Committees decided to entice overseas participation by making awards for marvellous work by contestants outside Australia and Tasmania.

Not all the suggestions received were able to be incorporated and the Committee was once again faced with the hard task of making suitable compromises. They follow the standard procedure as adopted.

PLEASE GIVE THESE RULES A FAIR TRY-

OUT FROM ALL DIVISIONS

Copies of the Rules will be sent overseas in time to make sure of some activity there.

G. M. Bowen, VK3XU, Chairman.

FEDERAL AWARDS

W.A.V.C.A. AWARDS

Latest additions to list are: W3OP, G3AIM, W3ZEN, C3TPK, JA1AG, JA1ACA, F3RSL, and W3GAD. 3B certificates have been issued to date.

G. Weynon, VK3XU, Awards Manager.

FEDERAL QSL BUREAU

A new world map for Amateurs and R.W.I.s adapted to the latest conditions has been issued in the practical size of 85 x 60 cms, coloured in blue, rose and black. The map contains call sign prefix of each country, as well as all zones. It has many other features. It is printed on fine quality paper and was produced by Fritz Lutzh, HB9CJ, Konstanz, Zurich 6, Switzerland. It retails for a Swiss franc plus postage.

A par in the July issue is already out of date. I refer to the information regarding the V.F.A.J. Cocos Island. During end of May, VY3AJ was added to the Bureau's list and left by air early June. All his equipment has been left at Cocos and it is hoped that there will shortly be another Fian on the air from this location.

Another new or amended certificate is W.A. BL (Worked All DMs). It is issued by W3VAA, The Society of the German Radio Technicians, through the DM Contest Bureau, DM3AEE, Postbox 165, Schwerin/Meckl., German Democratic Republic. There are 15 DM districts to contact. As the rules are too lengthy to quote here, full details may be obtained from this Bureau or from the Awards Manager, W.I.L.A.

The Society for Sports and Techniques of the German Democratic Republic has arranged a friendly voyage of the amateur-training ship Wilhelm Pieck during the period 1st May to end of August beginning of September, 1967. During this voyage an Amateur Radio station will be carried with the call sign D4MMH. The operation is DM3ACBS. The cruise will be from Germany to the Baltic Sea, through the North Sea, the Atlantic, the Mediterranean to the Black Sea. An award styled the Worked 3 Oceans Award (W3O) will be issued from the District Radio Club of Schwerin for the first-time contacts. Requirements are to contact D4MMH during the passage of all three of the oceans traversed. For contact during 4 or 5 oceans, special awards will be issued. Contacts with the vessel while it is in the Straits of Dover, Straits of Gibraltar, the Dardanelles, the Sea of Marmara and the Bosphorus will be valid for either the ocean just left or the ocean they next reach. For further information contact this Bureau or the Awards Manager, W.I.L.A.

The W3O VHF has apparently been revised, but my lack of knowledge of Spanish prevents me from quoting same. Anyone interested may obtain the required info in Spanish from this Bureau or the Awards Manager, W.I.L.A.

During a long contact with Phan JW8AA, the QSL situation was discussed at length. Phan states that the Postmaster at Saigon will not handle any letters addressed to him (Phan), and either destroys or returns them. He requests that QSLs be sent via OKIPIF of the Czech Bureau. Cards from Phan are routed via the local circuit and are coming to hand regularly now.

In a note to BER195, ex-VSBAS (GIANK) informed Treb, that he expected to reach VK3 as of 30th June and plans to stay awhile. The reason for this visit was not stated and it is also not known whether he is still in the R.A.F. or in civvy street.

From 24th to 29th January, 1967, Captain Ron Egon, of the Israel Signal Corps operated a 4X0L station, Shiret Shekhem, during the large competition of the Sinai peninsula. He used 160W into a long wire. He contacted 800 stations in the period including a few VKs. A special QSL card was printed for the occasion.

SILENT KIT

It is with deep regret that we record the passing of:-

VK3JD—Jack Davies.

VK6RT—Len Trunfull.

sion and Capt. Egon requests VK QSLs be sent him care Box 322, Haifa, Israel.

Yet another DL award has come to light. It is the W.X.H.S. issued by the OV Hagen Sendesatamatevra. Full information may be had from this Bureau or direct to the W.X.H.S. Manager, DL1MS, Hagen, Westerholz, Hagen/West, Lutzowstr 88, Germany.

Information has just been received from Stan Chapman, PJ2AE, ex-W1ITE, of Aruba, Netherlands West Indies. That is, Kurt PJ2AJ who was well known to VK DXers, passed away at the end of May after a sudden heart seizure. Stan says he has acquired Don's complete rig and hopes to be on the air frequently and to become as well known and popular as was VK as the previous owner of the station.

Ray Jones, VK3JL, Federal QSL Manager.

NEW SOUTH WALES

The Annual General Meeting of the N.S.W. Division was held at Science House, Gloucester Street, on Friday, 26th June.

This meeting was presided over by a Special General Meeting to consider the adoption of amendments to the Divisional Constitution. After several members among the 53 present had spoken on the legality of the proposed method of voting, the Chairman ruled that no vote would be taken because taking a vote of the members present would be fair to those who, in good faith, sent in postal votes. The matter was adjourned to a later date.

The Annual Meeting was then opened and after receiving the President's Report and a short discussion on the Motion Sheet, the nominations for the coming Council were announced. These were Messrs. B. Godsal, ZARO, R Hart, ZHO; M. Sobels ZOT; P. Healy, ZAPQ, N Beard, ZALJ, and J. Woodward, Z2AU. There were only six nominations for the Council, these members were automatically elected.

The notice of motion regarding the restriction to be placed on disposal of the Divisional property at Duran was discussed at length, several speakers pointing out the situation as it stood would mean that it would be impossible to dispose of the property even if it were in the best interest of the Division to do so. An amendment to the effect that it would require three-fourths of the majority of the members voting to carry such a motion was accepted and was subsequently carried as the motion by those present.

During general business, matters of Divisional interest were discussed and heavily debated by the members. President Jim Corbin, for his work in Institute affairs over the years was moved. After several members spoke very highly of the work he had done on members' behalf, the motion was passed with unanimous support and the singing of the appropriate chorus.

At the concluding portion of the meeting a statement was made by Jim expressing his thoughts on several matters. The Chairman closed the meeting.

In accordance with the Divisional Constitution, at the first meeting of the new Council the following office-bearers were elected: President of the Division, Perc Healy, ZAPQ; Vice-President, Jim Corbin, ZAB; Vice-President, Roy Hart, ZHO; Secretary, Keith Woodward, Z2AU, assisted by Norm Beard, ZALJ, Educational, Max Sobels, ZOT. The seventh member of Council has not yet been co-opted, nor has a Treasurer been appointed. At the present moment, it has been suggested that the retiring Treasurer, V. Cahill, IVC, has offered to carry on his duties.

It is the intention of the new Council to review all administrative functions of the Division including the necessity for the appointment of a paid Secretary to handle the increasing amount of correspondence and to provide better service to members.

It is proposed to include a technical article in your monthly bulletins. These articles will be on subjects requested by members. Council would be pleased to have your ideas.

The duties allocated to Councillors are: Bob Godsal, ZARO, Public Relations Officer; Perc Healy, ZAPQ, Co-ordinator of Education; Councilor in charge of Duran, Max Sobels, ZOT, Councilor in charge of Education—Lecturers, Technical Articles, etc. Ex officio officers who have been appointed are: Dave Duff, Frank Nine, SGL, Manager of the VKL Bureau. Several members have offered their services to assist these officers in carrying out

HUNTER BRANCH

The June meeting of the Hunter Branch was held at the Hotel New South Wales, Tighes Hill, on the second Friday of the month. A fair gathering of members were present with Lionel RCS as Chairman. Treasurer Bill ZET and Zone Correspondent Les SAJO were absent at the V.K.W. and Rec. Committee meeting.

At the "E" Band Convention with Bill using his mobile rig and Lee acting as log keeper, the boys won the All-Band Scramble with a score of 18 contacts, and again on the following day were the "E" Band Campbell Cup competition with a score of 20 contacts. Bill and Lee thank all Hunter Branch stations who exchanged reports with them during the contests.

Varley 2SF is very pleased with results from a new monitor using two triad diodes.

John YL interested and training her as a 2nd op; wise move Rodney. The new harmonic has not prevented John 3XQ from working a bit of DX on 20 mks c.w. Bob 3AQR on "Helping" to make life happier for him! Ham KLY by keeping regular schedules. "Pop" is an ex-Novocastrian and would be pleased to QSO local Hams. Nil heard of Ernie 2FP on 15 mks, so hope all is well with the old boy.

Ascan 2AB sent a postcard from 15 days at Coonabarabran and "De Me" with that friend of all Hams, Cliff EKO, the subject was photography of course (blondes mostly), but found time for a 10 mks phone/c.w. QSO with SAB who is his god son. Alf 2EDY says he has been away from the operation. SAMM has been transferred at work to next his home at Maitland, so Bill hopes to use time saved in getting his rig on air again. Postal authorities seem to think SAMM only Ham in Newcastle as all QSL

cards, etc., not fully addressed go to Ron, Mr. Ron Bishop, 2XW, has returned to G land and leaves his best wishes and thanks to all those in the district who assisted him with gear to get on the air.

On the 25th July of the month a meeting was held at Bill 2EXT's place of business and the programme for the Blackall's Field Day to be held on October 5 and 6 was finalised. The programme for the benefit of interested members is printed elsewhere in this issue.

SOUTH WESTERN ZONE

The preliminary meeting on 9th June at Coolamoon to arrange this year's Convention, to be held at Coolamoon, was very well attended by the following members: 3PL, 2AZX, 2ACX, 2ZOM, 2CL, 18Z, 2AZ, 2ZOM, 2GOM, 2CNS, 2AHL, 2ASHT, G. Clethero, R. Grieves, L. McMahon, L. Abbey, O. Bestead. It was decided to hold the Convention on 26th and 27th October, 1957.

The Griffith group (10 in all) invited Coolamoon on the Saturday afternoon prior to the meeting and on that evening our scribe had to fit 14 inside the shack; the walls have just started to come back upright again; must be the rain. Alf 2EW came over on Saturday evening, but could not attend the meeting. However, Alf is OK; must have been the transmitting oil from Griffith, Alf.

We have had a couple of visits lately from Lynn 2AQL who is a re-built and repaired mobile. Eric 2DY also called again and with Arni, Stan, Jack and your scribe a real rag-chew was had. Les 2ZCN from Ballarat, spent the last week of June as our guest at Coolamoon meeting, re-built and re-painted. If Nicky 2AJO will be on 50 Mc. as soon as a beam is erected. That 2ZCN block is a real arm-twister. Les was also given the job as Class Instructor on the Tuesday class night at Coolamoon. Jack and Stan say their heads are still buzzing.

GOLFIELDS AND LAKES

Still very little to report from this area. Geoff 2IVU from Singleton is active, as well as v.h.f.; Geoff is working 7 Mc. Alex 2ZJ was telling me in person that he gets on 14 mks and 20 mks. He has a 10 mks transmitter set up these days. Duncan 2MC is at least operating on 7 Mc. phone and talking of 144 Mc. working 2YL working 7, 14 and 31 Mc. when time permits and hoping to get going mobile before long.

VICTORIA

The July meeting was held at the usual place, usual time, after one of the coldest days we have had for some years. Coming to my mind, the night was very cold and the attendance suffered accordingly. However, the Radio Theatre was at a very comfortable temperature and the business of the night was not detracted from.

Following the usual preliminaries the lecturer, Squadron-Leader White, was introduced to the meeting by the President. The lectures then proceeded to enlighten us on the intricacies of "Ground Control Approach." This is something which the R.A.F. for talking its planes down to a safe landing through conditions which would not permit of a normal landing. Quite obviously this is of inestimable value in times of war, planes can easily meet the enemy almost at any weather, and thus eliminate the advantage that the enemy would otherwise have.

As is to be expected the equipment is very complex and exceedingly expensive, but for all that it is a most interesting plan, but a very accurate and utilitarian use of equipment in the Services, the equipment is made mobile to enable rapid movement between air strip, and incredible as it may seem it can be set up at a strip and be ready for use in half an hour. The advantages of this are, of course, that the one unit can be moved rapidly from place to place to suit the weather, or to the movements of war. Costs are also kept to a minimum.

As far as the Services are concerned this equipment has its greatest benefit in the fact that, as its name implies, the system is a ground control and functions with ground equipment only, instructions being given to the pilot through a telephone connection equipment. This means that the system is operable without the addition of equipment in planes, and in the case of fighter aircraft, which are already crammed with apparatus, is the only practical method.

As is to be expected, the system is based on the principle of radar. That is, an extremely short pulse of radio energy is broadcast and the energy or echoes reflected from objects are presented on a cathode ray tube for

interpretation and appropriate action by a control officer.

In the early stages of development after the last war, it took six operators to handle the equipment, but today the same equipment is carried out by one man. By virtue of this simplification, it is now possible in the latest equipment for three operators to bring planes into land in emergency, and if the need arises to bring planes in two at a time, one on each side of the strip. This is particularly valuable feature for fighter control.

Following the introductory address on the principles of the equipment, a film showing how the equipment functions and is set up and actual demonstration of the equipment in action, then followed.

Finally, the lecturer covered the technicalities of the equipment in greater detail, and answered a number of questions.

In practice, the operator within a given radius of the strip are displayed on a P.P.L. (Plan Position Indicator) tube. The information for this tube is gathered from a continuous rotating aerial which sends out pulses and receives echo through 90 degrees of travel. The time base on the P.P.L. is triggered by the tx pulses, and follows the direction of the antenna and appears on the P.P.L. tube as a rotating line. Echoes received then appear on this line as dots and through the persistency of vision the dots appear as continuous spots or areas of light depending on the size of the target. If the object is moving the dots move also and to avoid the confusion which arises when the dots move through a stationary light area, the entire equipment has been designed to eliminate all echoes from fixed objects such as hills, buildings or the like and only show moving objects.

To talk an aircraft down from a number in flight it is necessary first to identify the craft. Once this is done, the homing instructions may then be given. To do this the ground operator calls a particular aircraft as soon as this aircraft replies it is automatically d.f.d. and its direction shown on the P.P.L. tube. The aircraft then receives the homing instructions on the P.P.L. tube, the operator can then issue homing instructions without further delay.

As the plane approaches the airstrip other more serious developments take place. As separate information as to the height of the plane and its bearing to the airstrip, is brought into play. From this information the pilot is directed to bring his plane along a predetermined glide path which will bring him to a position where a normal landing is possible.

Many thanks are due to Squadron-Leader White for a very interesting night.

The lecture at the next meeting to be held at the usual place on 10th August is Graham 2ZK and his subject: "The Construction of a Television Receiver from Disposed Equipment."

New members admitted—Full Members: G. F. Jenkinson, D. Hull; Associates: G. J. McDaniel, R. J. Abbott, H. H. Miller.

We are pleased to advise that Phil Moncur (XYL of HLN) and Betty Cuthbert are both now gold medallists. Phil has been kept on the run by Len for a long while, but we were surprised to find at the golf and net running the race she was first. The job is now done as Phil thinks it easier to win medals at golf than radio. Ham golfers please note. Congrats, Phil.

80 METRE TRANSMITTER HUNT

The 80 metre tx hunt was held on Sunday, 18th June last, in delightful sunny weather. The tx was hidden on this occasion by Len

OBITUARY JACK DAVIES, VK1JD

It was with great regret that the Victorian members learnt on 11th July of the death of Jack Davies, VK1JD, at the age of 47 years. He died suddenly and peacefully from a heart attack. He will be well remembered by the 10 and 20 metre phone gang who recognised him as the leading DX phone man in VK. He was the first winner of the P.R.A. DX C.C. in VK.

Jack worked very hard for the Institute during the Model Exhibitions, taking charge of all low frequency transmissions. With his wife, Phil, who has always shared his interest in radio, he operated the open-air controls of the remote receiver. Jack made his section one of the outstanding ones at the Exhibitions.

He made radio both his work and his hobby, and his wife's technical knowledge was always readily available to both old timer and newcomer alike.

The Institute extends sincere sympathy to his wife and three children.

WIRELESS INSTITUTE OF AUS. HUNTER BRANCH, N.S.W. DIV.

SIXTH ANNUAL

FIELD DAY

BLACKALLS PARK

SATURDAY and SUNDAY,
5th and 6th OCTOBER, 1957

*

PROGRAMME

Saturday Afternoon, 5th Oct.—
3.30-4.30 p.m.—Heats of the 144 Mc. Bluffield Tx Hunt.
4.30-5.30 p.m.—Technical Lecture.
5.30-6.30 p.m.—Tea.
6.30-7.30 p.m.—144 Mc. Hidden Tx Hunt.
7.30-10.30 p.m.—Films.

Sunday, 6th Oct.—
9.0-11.0 a.m.—144 Mc. Hidden Tx Hunt.
11.0-11.30 a.m.—Registration and VK2WI Broadcast.
11.30 a.m.-12.30 p.m.—7 Mc. Scramble.
12.30-1.30 p.m.—Lunch.
1.30-3.0 p.m.—Heats and Final of the 144 Mc. Bluffield Tx Hunt.
3.0-4.0 p.m.—All-Band Scramble.
4.0-5.0 p.m.—OM's Races.
5.0 p.m.—Prize Giving.

*

During Sunday, Races and Competitions will be conducted for the XYLs, YLs and Jnr. op's.

Speed Beat Trips for junior ops. on Sunday afternoon.

Prize for the best fish caught on Sunday between 9.0 a.m. and 4.30 p.m.

Boiling water available free.
Registration: 12/6 OM's, 2/6 XYLs, Junior ops. free.

ELN and was located near the ford of the Marybourn River, a distance of approx. four miles from the G.P.O. Although the signal was given in the starting point Tom SAGG and his navigator Maurice MURRAY arrived on the site within 20 minutes, but another hour and 40 minutes passed before they located the exact spot. The tx was buried in a steel earthed box in a field three feet under the ground with two wires going underground to some bushes there bushes with the same going away from that point. However, just as Tom and Maurice started digging, the rest of the competitors, who had been wandering around in the vicinity for some time, arrived on the location simultaneously to see Tom and Maurice dig the tx up.

The next tx hunt will be held on Sunday, 4th August, when the winners, Tom SAGG and Maurice MURRAY, will be hiding the tx. Come along and bring the family and friends and a picnic afternoon tea and join in the hunt.

EASTERN ZONE CONVENTION

The Eastern Zone Convention, held at Moe, on Junes 23 and 24, went off very successfully indeed. The dinner provided by the Methodist Ladies' Guild was excellent, and the 200 who sat down to it, including from Melbourne visitors and their wives, and Councillor Gregory. After the enjoyable dinner and the usual toasts, the womenfolk departed to the picture theatre, while the men got down to business, electing to the chair Ian SAWYER, and to positions George S.Z.C.G., Vice-President, David SDY, now as Secretary and Treasurer; Graham J.G.Z. Zone Organiser; Cliff SAIJ, Official Zone Station and call up station for the Sunday night East and West Hook-up on 80 m. A lot was discussed in the few hours with all future activities, C.D.E.N., etc., before the YLS and XVL returned, and supper put on.

On Sunday morning a 2 and 80 m hidden tx hunt was held. There was no entries for the 80 m section, but quite a few joined in the 2 m section, and were joined by S.E.A.T. planted in the hills at the back of Horsham. First was SAWYER and third place went to ELN. After lunch at Tallyay, Moe, the 2 m fox hunt was put on, and the visitors without tx's were invited to the hunt. All joined in in their own cars, seeing the surrounding countryside, as well as joining in the fun of fox hunting, and once again Len SLEN put on a very good show, which we thank him greatly for, and I believe everyone enjoyed themselves. At one stage Jack SAIK stopped and asked a farmer who was feeding his cattle near the roadside and he seen a yellow Zephyr, but got no where, as the farmer's only reply was "What? Haven't you seen your yellow heff?" George S.Z.C.G. was the winner of the fox hunt.

The Eastern Zone board decided to hold a fox hunt in Glengarry once a month from now on, this will be held on Sunday afternoons.

After having afternoon tea and inspecting the television sets, assembling line our Mels, bounces and Farnrite Gulls, we all returned home after a very enjoyable weekend, and looking forward to our next Convention to be held next March at Sale.

NORTH EASTERN ZONE CONVENTION

The North Eastern Zone Annual Convention was held on 11th May as an open-air function on the camping area where Lake Nagambie joins the Goulburn River. Unfortunately only a very small proportion of our members were able to turn up, but despite a large number sent messages, the result was a dead heat. Dick DESCO had to look after the XYL recovering from severe shock as a result of a minor accident the previous week-end. Associate Jim Harrington had to return home as soon as possible because of illness in the family, and still others again were on duty at their employment that day.

However, SASF, ZAGG, SALE, SPP, SAPP, SCI and Associate BILL HEMPILL were able to attend. State President Fred JYS, and former members Dick ADG and Doug MJ, of Macquarie Island fame were visitors. While a number of XYLs and harmonicas made up the party, Bruce JAGG was re-elected President. Des SCO was re-elected Vice-President, and Andy SDY was appointed Secretary. Brian SASF is now Zone Correspondent, and as a consequence of his continued interest in the zone S.Z.U. was re-appointed in his absence to do the replies to the 2WI broadcasts if he can see fit to continue in that capacity.

Zone hook-up time has been changed to 3.7. MS. on Wednesday 2000 hours. This time was chosen to give the recent Zone Convention to try and stimulate some interest in the Zone, but as the Convention was rather poorly attended, it is not known whether this time will be suitable to most members of this zone.

It has not been possible to collect much news of the members and associates for obvious reasons, but included are some items of news concerning the members of the band DX group and SAPP. SAPP has been receiving reports from the Bureau for DX news, which personally have not had, but apparently pirates have been working their calls on the bands. Ken JKR is now using a cubicle quad antenna on 20 m. Bryan JASP has been devoting his time to this other Asperger Radio, in effect he has recently become unengaged and SAPP is contemplating full re-build of all his gear John JACK adding to his residence-increasing space.

No communication from Wangaratta and Beechworth areas so how about dropping a note chaps on your activities until such time as we can talk to you on the new hook-up time and learn something about the doings over your way. Murray JHZ, very busy with the new station, however, by the way, is situated a very nice highland town. SAPP seen about town often; his interest, along with Ted SADOB and Syd JCI, seems to be centred on t.v. activities. George SDG heard round the bush on 10, 12 and 28 m by Bruce ZAGG who has been busy working his gear. He appears to be working well by reports received.

Well chaps, let's have some news, also not forgetting our associate members—SASF.

SOUTH WESTERN ZONE

The Geelong Radio Club held its annual meeting this month and the main office bearers resulted as follows: Jim SAGT, President; Vic Clarke, Treasurer; Keith Vines, Secretary. The ladies' night was quite a success. Noel SANG was the first to announce a new convention date. Bill SAPP showed slides of a colour film and Jim SABT showed slides of various interest. The retiring President, Bill SAWZ, thanked all for their co-operation during the year. An interesting new syllabus has been drawn up and these will be posted to members soon.

There has been no sight of Mart SAKU, of Colac, since the Convention; we hope all is well. Kevin SAKR has no time to chase DX although working seems well as he is tied up with t.v. work. John SAGD is getting 5W with "fantastic results" on t.v. preselection. Neil SHG is going in for long yagis with t.v. and doing some DX. Jack SJA is doing well on 21 Mc. DX and John SARI has troubles—but is never up.

The Secretary for the Zone hopes soon to have some minutes available to all members from the Geelong Convention.

WESTERN ZONE

Merv SAGO, of Horsham, is at present assembling a stacked beam array on a 40 ft. tower, so when this is completed Merv expects better signals on the higher frequency bands. Noel SAJJ has recently moved into a new residence and having the a.c. power will soon be on the air. His tx consists of GE650 or xtal, switched to either 807 or 813 for 2.5 to 28 Mc work. V.H.F. rig is TV501, UHF is TV502, and MC is MC-1000 with full clamp on h.f. with a.m. or f.m. on v.h.f. Rx: modified RAIB with double conversion cover 500 Kc. to 40 Mc.

Herb is also a keen television enthusiast and has obtained some very good results. Sometimes when conditions are good the reception is as good as it is possible to get. There is an otherwise dead signal fades in and at times is a washout. Antennae in use are yagis, series rhombics 144 and 286 Mc., also cylinder slot for 286 Mc.; on the lower bands at present using XYL's clothes line which is cut for 14 Mc. centre fed.

SHILLING LAKE

This month's notes start with a timely reminder to all interested that the zone hook-up takes place at 7.30 p.m. on the second and fourth Mondays of each month, freq. 7120 Kc. Unfortunately some members were conspicuous by their absence during the first two hook-ups in June, some being heard working DX on 20 and on 40 m.

It was pleasing to hear of the interest shown by St. Arnaud members and Nevill SACP is arranging to gather them into the fold. Jim SAVS thinks that t.v. might have claimed a few members from the local t.v. viewer (t.v. viewing) in which case a lot of sympathy will go out from the Bendigo gang where t.v. looks like becoming a problem to all very shortly.

To follow in Dale Carnegie's footsteps, Nevill SACP is busy working on an s.s.b. t.v. proofed a.m., s.s.b. with a heterodyne unit to end all self-heterodyne units. This may turn out to be the little ticket box that many have waited for, but even if it isn't, it still provides a lot of enjoyment and will stop the receipt of QSL cards from t.v. viewers.

Speaking of enjoyment—in large quantities, mainly liquid—BILL SAMH, who has been semi-resident in Bendigo for some time, was farewelled on Friday, 5th July, prior to leaving for Coburg, which is nearly as far as Bendigo from Melbourne, and carpet of wires in Ballarat. Chorus Williams and others said all for your assistance in the post, particularly in the erection of that mast at SFT's QTH.

Now that SFT has his new mast holding a G4ZU beam 63 ft. in the air through the able assistance of SACP, SAMH and other friends in need, he can recommend the extra 40 ft. for DX-getting ability. If any one would like information on how to erect it, just drop a stamped self-addressed envelope to SACP or SFT will bring a 30 page reply based on very good experience acquired the hard way.

Rex EUR has just returned from holidays in Adelaide where in addition to finding out how VK6s live he probably enjoyed himself. Peter SAPP is playing with Rothman modulators, whether successful or failure has attended his efforts, we don't know. But it's good to have someone around who has tried these ideas and knows the answers.



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QUEENSLAND

Since the last general meeting in May the Queensland Division has sailed through a very busy programme. Speaking as a sober participant and observer, I know that everyone who travelled to our Annual Convention at Palm Beach had a good time. However, according to last month's Council minutes which was held on 13/6/57, final arrangements were made and all the loose ends were tied up for the Palm Beach Convention which followed on the 15th, 16th and 17th June.

On behalf of Council and all the fellows who assisted them in setting up the Convention, I would like to pass on their very thanks for a tip-top job of organising by Aussie 4TN.

At the Council meeting, Paul 4QJ presented his resignation as Federal Councillor. Unfortunately his transfer to another State had "come of the ice" and concluded a pleasant association with many 4Ks here. Too bad we had to lose you, Paul, but it is the price of your new QTH. The Council members appreciated your companionship as well as the services you willingly rendered to this Division. Well the leaves a vacancy on Council. As a majority of Council members would serve on one or more other W.L.A. committees it would be truly appreciated if some city Ham would fill the breach. Arthur 4AW, in an unofficial capacity, has generously stepped into this position. What a noble boy!

At the same time we would like to wish Charlie 4CJ the prospects of a wonderful existence now that he has climbed out of harness. He, too, has put endless years as Treasurer into the W.L.A. and I know that Council is sincerely grateful to you, Charlie, for a job well done. Fortunately, Jim 4OB has signed his willingness to fill this position and we all wish you every success as Treasurer.

After the Council meeting Councillors were invited to remain for the Emergency Committee meeting. Since 4VJ was in the chair, and after considerable discussion, many problems were discussed. The emergency boys were quite wisely I thought, formulated a plan to be presented in three separate stages. The policy is, in detail, complicated as it embodies the vast problems of Civil Defence.

The boys concerned closely examined the results of the Convention competitions and it was noted with interest and concern that widespread communication offered by the Camp HQ. Station, by all the 14 h.v.f.v.t. mobiles operating and by the numerous personal receivers that stage of the W.L.A. Civil Defence Emergency Policy is an unqualified success. It was also noted that some operating procedure would have to be modified and that some measure of air discipline would have to be maintained. It is hoped at a later date to present to a general meeting a trial operation of 67 structures in one with 4L1 operating on the SAME frequency! It has been told that the operating procedure is some of the best ever heard. Keep it in mind, boys, it should be very interesting as well as instructive.

The only way that we can find a practical plan for Civil Defence is by suggestion and argument, and subsequently at the last general meeting in June, the boys in the three different groups, under the guidance of Evan 4EP and John 4FP, tried to resolve the pattern of such a procedure. The Emergency Committee in stage 2, decided that these discussions, of which there is to be another, puts the Amateur in the picture and lets him know just what the picture is about.

Stage 3 will then be the first trial run amongst ourselves. A dedicated low power v.h.f. mobile, low power transceivers and perhaps one or two relay stations working into a central bdg. (which in this case will be 4WV) should then reveal any possible weak links that we may have overlooked.

The Emergency Committee has put a great deal of thought and effort into the preparation and preselection of the Amateur C.D.E.N. and they should be thanked, as well as encouraged in undertaking such a task. We, the ordinary Amateur, can do this by just making that little extra effort and extending our co-operation wherever possible.

Our general meeting on 5/7/57 was one of the liveliest we've had for many a long day and quite high in entertainment value, if you sat on the sidelines! A circulation rumour has stimulated some members to object to the possibility of W.L.A. dispensing with entirely reaching the hands of non-members, particularly when the gear went to ballot. Long discussion finally resolved the matter to the statement: "A successful member in the dispensing gear sales can sell his gear only to a fellow member, and any member who does otherwise,

without the consent of Council, will not be allowed to ballot for future disposals equipment." It is only fair, as there are always many more successful members in these ballots than successful ones.

After the air had cleared, the ballot for 20 fm. transceivers took place. Winners' names have been broadcast over 4WV and will appear in QST. Some names were drawn out of the hat should any of the successful members not claim their gear. Members are requested to pay for their gear and effect transport for same within one month. Failure to do so will result in the gear which will go to the five extra Hams whose names were drawn at the ballot.

A lecture on mobile gear is to be given at the next general meeting. Several Hams will present their views on the subject of mobile gear and the operation of same. Should be an interesting evening.

Well it certainly pays to advertise! We had over 70 entries in the mobile gear competition and a varied programme kept them all busy! Hams from Sydney, Newcastle, Coff's Harbour, Brisbane, Grafton, Gympie and Townsville rubbed shoulders for three days at the National Field Day and Picnic Beach. The boys chin-wagged on Saturday morning until most of the travellers had arrived at the camp. Dinner more or less officially opened the long list of activities.

Sunday morning the camp rig, operated by Aussie 4TN and our Past President, Fred 4ZM, was set up in the main office. Recordings were made for re-broadcast purposes over 4WV.

The 7 Mc. scramble was won by John 4FB with 23 contacts. John also captured the first prize in the 3 mc. Hidden Tx Hunt on Monday evening, located to 7 miles away in 15 minutes. The Bob Campbell Memorial Contest was won by Bill 4XT with 38 contacts. Bill also scooped the pool in the All-Band Scramble with 19 contacts.

One of our 2 mx experts, Jack 4JO, romped home in the first 2 mx Hidden Tx Hunt, having found the tx across the river at Upper Currimundi in 18 minutes. The following day Bluffield 12 mx contests were run off, emerged first, followed by John 4FB. Congrats, Jack on becoming the 1957 Bluffield Champion.

On the Saturday night we had a very pleasant barbecue supplemented by a kg of that amber stuff. It was held at Morrie's home and of course Morrie, our cook, officiated. We had another informal get-together on Monday evening by the banks of the river. Thanks once again, Morrie, those steaks were delicious. Earlier we had a film show, which was put on by Harry Peal, and the presentation of prizes to contestants. The awards were made by two gentlemen from the R.I. Dept., Messrs. P. Andrews and Monroe, and it left quite a nice feeling to know that they were visiting us socially rather than officially.

The latest news on our disposals tubes is that we have news and they are on their way up from Sydney. The 4WV and 4XSOX instructions on price, etc., have yet to be issued. "QTC" will contain all the necessary information as it comes to hand.

TOWNSVILLE

The last monthly meeting took place at the residence of 4PKX and quite a number of the fellows turned up together with a few prospective Amateurs. Our Secretary, who has returned from a working holiday to the capital city, gave a resume of his doings there, and the members were greatly interested in W.L.A. he attended whilst there. Rex 4LR, who attended the Palm Beach Convention over the last long week-end, came back quite thrilled with it all, especially the hidden tx hunts and is quite anxious to have one held here; his report was well received.

After the usual minutes being read and disposed of, quite a lengthy discussion took place on spending of the club funds. It was realised that it would be in the dim future before enough funds could be accumulated to obtain a suitable building for the club. It was also pointed out that the W.L.A. in Sydney, with such a large membership, has just accomplished same after many working bees to get the job finished. After a lot of cross-examination, the members had a discussion and allowed each in turn to give his views so that everybody was quite clear in his own mind just what he intended to vote for. It was then resolved that, again the matter be left till next meeting, when a vote will be taken, re the building. Main points to be decided were whether to build and buy testing gear or purchase technical books for a library and who would hold and be responsible for same.

Ted 4EY and many friends in the south would be glad to help with both a deconvol plug in first r.f. valve socket and boost all signals

to 50 plus so will in future enjoy a QSO! Pressure of work stopped Allan 4PS, just back from a business trip to Sydney, from attending the meeting. Don 4PZ, who had been managing to work young truly on 7 Mc. and hopes to have Jim 4XO re-building shortly. John 4DK heard on 15 Mc. with Vern 4LK. Sorry boys power line QRM prevents me working in my shack—but try night time. Hal 4EP on Thursday Island so it is anticipated he will be quite active when these transmitters are modified and pumping out signals. Also congratulations to Vern on his 14 Mc. article in June "A.R."

MARYBOROUGH

4AL is busy building a new shack under his house. A beam will be manually rotated from the shack. 4DJ is re-building again. This time it's the Mark 3 model based on a Geloso. Much hard work has been done building an enclosed rack and panel job. Grahame also built a 3-tube converter for 15 mx and has been heard on the air.

4CB having heard some Africans on 10 mx on his 4CX is thinking of returning to his old 10 mx stamping ground. 4BG still plugging along on 20 and 15 m. phone and c.w. At Gympie, 4HZ has improved the landscape by putting up a steel tower.

SOUTH AUSTRALIA

Our new programme committee, Lloyd 5OK, Bob 5PU, Jack 5WZ, Don Kelly 5ZW, presented their first programme last month get-together being a film night showing a very good film on Arnhem Land. The film was in excellent colour and was projected professionally by two projectors [yes, they obtained synchronisation for the first try]. The programme was well received by the near record assembly and at the conclusion Lloyd and Jack, who did the work, were suitably thanked for their splendid effort.

Amongst the many visitors present, 4JW was from the most distant parts; perhaps you enjoyed your visit with the OM's? I hope again for us to see our "air friends" when possible. It could also be said we had a "visitor" from the Murray Valley area in Hughie 5SCA, who was holidaying in Adelaide at that time and dropped in to see the boys. Hughie being a v.h.f. type, will reserve report from him for that section.

Some new members were accepted, two full members being R. L. Umberger, 5UM, and J. B. Hawke, 5BH, with associates P. I. Woodlands, J. M. Dow, and L. J. Ernst. Welcome felicitations were extended to the new members. A transfer to us from ex-4EWL, E. H. White, who now becomes 5OW and stationed at Darwin, also adds to our membership. Do you intend working 5GZ? The boys will be waiting for you to do so.

One item (regret, one) item of correspondence cleared the "Mail" for Brian 5CA, he has been singularly lucky recent months in that most of the correspondence (or envelopes addressed to him) have been of such a nature that the Translators have been absent.

Gordon 5XU concluded the evening by giving us a run through on matters relating to moon watch and so on, and has further information for those who want to go more fully into the matter.

Basically, a 108 Mc. continuous c.w. signal will be sent out and due to the Doppler effect will require a receiver band width of 6 Kc. The satellite will (or should) be visible for 15 seconds only each time past, the visibility being mainly confined to early morning and late evening.

Quite a few more 6420 beams are functioning over this way, including Jack 5LR and SJO, in fact Joe 5CZ is carrying a list of 21 Mc. calls which he has put up to the power he will work with. By the time you read this, Len 5XZ will have his up and working stop his new 40 ft. tower and no doubt will have worked W.A.C. on each band—at least that's what he reckons. It should do for him after all the work he has put into it. In the meantime Lee has been using a bodgie antenna which is fed at point X with Y length of feeder that has proven a very successful noise receiver.

Our next picnic has been fixed for the January holiday and this time will be held at Tattersall Gully—more of that when details are worked out.

There have been a few enquiries of late for new Morse transmissions and it is now learned that in addition to Tom STL on 3304 Mc. 7 p.m. there will be a new transmission on 3304 Mc. frequency from 9 to 8:30 p.m. each Sunday. If you make use of these transmissions let them know, drop them a line or phone, for if no comments are received they are apt to think it's not being used and could be excused for dropping it off. It's up to you to help keeping it going by the means.

Have heard the VK5 boys calling CQ on 19 mc quite a few times lately, so you 18 mc boys would make some interesting contacts then. It's worth watching.

Talking of interest, now polish up the gear or operating procedures for R.D. Contest this month, give the present holders a run for their money or even see if we can get that trophy back again—long time since.

Sacrefie, that's the word, yes sir! Had a contact with John SJW last week, on 40 mc, he stepped down from 15 mc long enough to locally, nicely, to hear you John. Des SDRK was on the same band and getting out well. John's antenna was described by Des as needing a set of sails only to complete the illusion of a windjammer in the Watsons Bay backdrop. It matches the fishing habit.

Lance SXL has been having a bit of modulation trouble lately and discovered that it the most likely cause is the LO. Listen to Lance like Des SMD did and build it on its side anyway, and tell everyone it was meant to be that way all the time. Burnie, SWC's main op., advises us it's warm up there whilst we freeze down here—so you are all entitled to a welcome up front. R.D. Burns good luck to you.

Col. SRO has broken the ice again lately, and has appeared on 80 mc, that's a slow down from 1 mc Col., but it sounded good. Chas SON (Wandering Chas.) has been doing great things with his new pre-selector and now works more than ever—despite the fact that he has at last met Chas SON mainly I think as a result of Chas' wandering nearer him.

Dave SEF has a much improved signal as a result of a pre-amp. re-build. Wal SDF really wants to make it work, so will it be? Bob SBO has made a return to 40 mc after a long spell too, his very fine signal indicates no loss of technique as a result of the spell.

The latest Grey Beard is Claude SCHAUDT, who thinks "Gone" is a better name, and is sure to have such a distinguished gentleness amongst you. Col. SJC has pushed up his new shack some more and now has line to drop the solder on. Tom STEW is rushing two new pots to him, and is ready for R.D. Day, whilst Ed SKYU has 20 mc going very actively with Stuart SMC very silent, warn it up now and again Stuart. The one-eyed monster continues to engage John SJA. Congrat Bran SAB, new daughter, no less, who with a name to match, 15 mc makes two new babies, good luck Bran.

Quite a lot of interest is being shown amongst the boys on double sideband reduced carrier, so don't be surprised if you hear a funny sounding signal or two soon. The arguments that are going on between the two ideas of s.a.b. & d.b. indicate many more to come in this new subject than any other idea for a long time, and at least will promote some hasty debate. Added to this "idea" to receive it with a simple short "CQ" to receive it, so there is no excuse to hold back now. Any way, whichever way you may argue on its merit, if d.b. is generated at low level and linearly amplified to what you fancy, it only needs a sideband filter later on and the whole argument can be proved.

WESTERN AUSTRALIA

We are very sorry to report this month the loss of Len GIBST by a spell of illness. He will be missed by his many friends. The Division has lost a valued member, and we all extend our sympathy to Mrs. Trunfull.

OBITUARY

LEN TRUNFULL, VK5RT

VK5RT will regret the passing of Len Trunfull, VK5RT, an Amateur of many years standing. He was buried in Karrakatta Cemetery on June 31. The W.L.A., W.A. and the Division extend their sympathies to his widow, Enid, in her loss. VK5RT was all that an Amateur should be, friendly always, anxious to help others, and grateful for any suggestions.

VK5RT made the announcement on the news a couple of days after his death and maintained one minute's silence on an unmodulated carrier.

The regional meeting for June was held on 18th and SGR gave a very interesting talk and demonstration on Thyatron Control of Motors. The meeting was well attended and interest evident on 40 mc on most days at some time or other, and 80 mc showed increasing activity, several new calls and some old ones rarely heard on the LF bands these days being noticed.

John SJW, via telephone from the club station at Pierce (SAP) is putting out a mod sig on 80 mc, with his new call GJMM. GJO is very solid with 25W. to a TESLA, a re-built modulator and new mike, and GRK has been making signs on 80 bands. Stan SJF, with a mod sig on 80 mc, is on the scene. Station cut that way, is on 40 mc c.w. with low power on LF end. Another surprise on 40 was SCN. Judging by Cyril's sigs he should really "go to town" when his new rig is completed.

On c.w. Tom STEW is in a very good way from his new QTH in Vic Park. SRE is busy getting a 40 ft. tower transported and re-erected. GJW was building JPC with his 100 running half a watt c.w. on 40 mc for RST 800. SGL has been doing the same, and a nice tool. SBO has also been on the 14-2 bands, a change from v.h.f. Role? GJR makes occasional appearances, likewise GWS and GAG.

Wally Coxon, celebrates this year 40 years to the day since he first became interested in crystal reception, with two or three others in W.A. and a dozen or so in Australia. Wally started on his work in radio. Ignition coils from Ford cars provided a means of transmission in the first days. With ventures into commercial interests, Wally has hundred stations, to conducting a radio business, Wally has always found time to devote to Amateur activity, and says that whilst the first 80 years was the most thrilling, the next 80 will provide some new avenues of investigation.

Wally has been associated with the Royal Flying Doctor Service for 12 years, much of the radio development of bases and outposts being due to his work.

To his early associates still on deck, Wally sends his greetings per medium of "A.R."

TASMANIA

Ah, the unaccountable irreverences cast by the Northerners upon these countable grey hairs—Still—

Wat boy! Is that the voltage lingers on. Somewhere in the chaste dark expanse? Wat of bloke will never take the chance And hope it's gone?

He's the blithe wat has already give two hoots,

And whipped his paw out hot an' tingleing—

He's cautious 'cos he's found the very thing—

Wat boots.

At the July meeting another good lecture, this time from Joe TBJ who modestly dubbed it "Bits and Pieces," dealt with the intriguing possibilities of double sideband suppressed carrier. You know, stereophonic static. And it's heard that one or two of Joe's hints and links have been followed and have been tried ready, with happy results. Rumour has it, though, that he has been furiously trying EL23s in the FRONT END of an ART.

Ten TLE plans a telling blow for 144 Mc. with a four band schedule for the evening of 8th August. This will support the motto so because those who grill their batteries can console themselves with the prospect of grilling some chops and things afterwards on the TLE estate.

The Sunday morning round-up gets more and more of them out of bed by 10 a.m. despite the temperature, as witness one sampling: TBJ, TBT, TCA, VCT, TJO, TKA, TEC, TLE, TEL, TLS, TBL, TOM, TPP, THM, TRX, THV, TTY, TTY. These are reasons enough, with a counter-rotating clock, the calling in has proceeded from the northwest around to the south on most occasions. Now it is to go the other way for a while, which will at least rescue poor old ART from his customary spot on the end of the queue.

TRX and TLE are to be heard on their patient job of QSL-sorting. It's believed that GCI in the municipality of Esperance proposes trying the luck soon. Sunday, while the northern limits proposed to be marked by AJT, Jack expects to resume his better-known call NIB for good in October.

A thought for the R.D. Contest: It's all right to get excited about the rules and one thing, but it's important to remember that win or lose, there is precedent enough in those we can memorize . . . and it's only for a day . . . to lose it as actively as possible.

NORTH WESTERN ZONE

I trust that by now you will have all given a true and faithful record of your income for the year. As far as I know it is not permissible to claim capital cost on that new rig!

And how's about all those little old snappers—looks as though old Sol has been sending out parcels of chicken pox—Dennis TDR about that, although they'll all be gone by now, the chicken pox, I mean. I haven't seen any of these Rosin' Australis in spite of persistent reports, but I hope those active boys with Z coils made up will be able to bounce a u.h.f. wave over vast distances.

One of our latest additions to the North West, Lee, is no longer a VK5 working portable VK1, but has now been operating as YKC for a month or two now. I'm told there is now a small hut built on the bank in a hollow, or shack, beside the rig, Lee.

We have another very keen type transferred into our area, Pat TFM from Kalgoorlie, he has been banished to Stanley to watch the world go by. Pat has recently announced the fact that he cannot bring his rhombic with him, unfortunately it covers about an acre of ground. Pat had received some nice QSL cards last time I was there—all DX of course. Interestingly enough, Pat is a TWM, and is currently recuperating at Beaconsfield. Best regards to you and yours Reg.

The really big item for July was the zone meeting held at Roy TRN's, and it appears that everything about it was well colored. The meeting was well attended, amounting almost to full sold for phenomenal prices and the supper provided by Joyce, TRN's XYL. Sorry I could not make it, Joy, but I was told by Sid TSE that he had come in with mouthfuls of food.

No 11 sets are in the news again. One has appeared on King Island, Macarapoo, to be precise. Owned by Myles MacCinnis, who boasts a 2nd Class Commercial, so we should have a sig from the cable station there soon. Another member too, do you think?

HAMADS

1/- per line, minimum 3/-.

Advertisers under this heading will only be accepted from Institute Members, and desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

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SELL: Pair "Reyco" multiband dipole coils (see "QST" Mar. '55). Labgear Wideband Multiplier, switched 80 thru 10, new, with pair 12BH7 tubes. Johnson Viking SWR Bridge (new). Pair 4-125A tubes, one new, others used few hours, with sockets. One 4-85A tube, new, w/socket. Tx-exciter for 20, 15, 10, uses 3 x 5 AM6s, one 5763, one 6148 or 2E26, complete with tubes; has v.f.o. w/Eddystone L.v. dial, calibrated; in black metal case, wired w/shielded hook up and ceramic disc by-passed; a gift for less than cost of parts. Kit of parts for Edmonds Xtal s.a.b. filter exciter, includes 13 x FT241A xtl. (455 Kc carrier), U & L s.a.b. reject, with xformers, ceramic switches and slug tuned formers for converter stage; all new and first quality; anyone want them? Write for further details. J. K. Herd, P.O. Box 73, Wangaratta, Vic.

SELL: Type 3 Mk. II, Heising ser. mod., xtal mike, xtal, spkr. Good condition. £40. F. Davies, 31 Jackson St., Toorak, Vic. (LA 8899).

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3.	14,000 — 14,350	0.5
4.	7,000 — 7,300	0.23
5.	3,500 — 4,000	0.7
6.	1,800 — 2,000	0.25

FREQUENCY STABILITY. Excellent overall frequency stability is given by the oscillator circuit design. Negative temperature co-efficient condensers counteract long-term drift.

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